VITAMIN D

UpDates Vol. 6 - N. 3- 2023

Sito Web www.vitamind-journal.it

Editoriale

Il ruolo della vitamina D nelle malattie dermatologiche

Colecalciferolo o calcifediolo? Una questione di narrazione!

Selezione bibliografica

www.pacinimedicina.it

VITAMIN D
UpDates

Direttore Scientifico
Maurizio Rossini

Comitato Scientifico
Francesco Bertoldo
Rachele Ciccocioppo
Andrea Fagiolini
Davide Gatti
Sandro Giannini
Paolo Gisondi
Andrea Giusti
Giovanni Iolascon
Stefano Lello
Diego Peroni
Gianenrico Senna
Pasquale Strazzullo
Giovanni Targher
Leonardo Triggiani

Assistente Editoriale
Sara Rossini

Direttore Responsabile
Patrizia Pacini

Edizione
Pacini Editore Srl
Via Gherardesca 1 • 56121 Pisa
Tel. 050 313011 • Fax 050 3130300
Info@pacinieditore.it - www.pacinieditore.it

Divisione Pacini Editore Medicina
Fabio Poponcini • Business Unit Manager
Tel: 050 31 30 218 • fpoponcini@pacinieditore.it

Alessandra Crosato • Account Manager
Tel: 050 31 30 239 • acrosato@pacinieditore.it

Francesca Gori • Business Development & Scientific Editorial Manager
fgori@pacinieditore.it

Manuela Mori • Digital Publishing & Advertising
Tel: 050 31 30 217 • mmori@pacinieditore.it

Redazione
Lucia Castelli
Tel. 050 3130224 • lcastelli@pacinieditore.it

Grafica e impaginazione
Massimo Arcidiacono
Tel. 050 3130231• marcidiacono@pacinieditore.it

Stampa
Industrie Grafiche Pacini • Pisa

ISSN: 2611-2876 (online)

Registrazione presso il Tribunale di Pisa n. 2/18 del 23-2-2018
L'editore resta a disposizione degli aventi diritto con i quali non è stato possibile comunicare e per le eventuali omissioni. Le fotocopie per uso personale del lettore (per propri scopi di lettura, studio, consultazione) possono essere effettuate nei limiti del 15% di ciascun volume/fascicolo di periodico, escluse le pagine pubblicitarie, dietro pagamento alla SIAE del compenso previsto dalla Legge n. 633 del 1941 e a seguito di specifica autorizzazione rilasciata da CLEARedi: https://www.clearedi.org/topmenu/HOME.aspx. Edizione digitale - Settembre 2023.

EDITORIALE

Maurizio Rossini

Dipartimento di Medicina,
Sezione di Reumatologia, Università di Verona

Cari Colleghi
in questo numero troverete innanzitutto un update sul possibile ruolo della vitamina D in diverse malattie dermatologiche, poiché il suo deficit può concorrere alla patogenesi di alcune malattie cutanee, sia neoplastiche che immunomediate.
Da reumatologo sono in particolare interessato alla psoriasi, la cui incidenza e gravità si sono dimostrate associate in numerosi studi a carenza di vitamina D e il cui trattamento prevede da anni l'uso di analoghi topici della vitamina D.
L'associazione della psoriasi con manifestazioni artritiche è frequente e ben nota: l'artrite psoriasica è classificata tra le spondiloartriti (SpA), che rappresentano un gruppo eterogeneo di malattie reumatologiche infiammatorie croniche accomunate da caratteristiche genetiche, radiologiche e cliniche, tra cui il possibile coinvolgimento delle entesi, dello scheletro assiale e delle articolazioni sacroiliache oltre che di quelle periferiche. Numerose evidenze dimostrano che specifiche citochine infiammatorie sono coinvolte nella patogenesi delle SpA (IL17, IL23, TNF-α, IL6). In particolare l'IL17 svolge un ruolo patogenetico sia per quanto riguarda l'impegno articolare che per quello a livello delle entesi e dell'osso. Recenti evidenze indicano inoltre che nella patogenesi delle SpA sono coinvolti anche fattori metabolici oltre che immunologci, tra cui in particolare quelli che modulano il metabolismo osseo, come DKK1, sclerostina e PTH, come da noi dimostrato [1-5]. Su entrambe queste componenti patogenetiche, immunologiche e metaboliche, vi è il razionale scientifico per ritenere che la vitamina D, spesso descritta carente in pazienti affetti da SpA [6-10], possa avere un ruolo importante. Infatti, oltre a svolgere un ruolo essenziale nella regolazione del metabolismo fosfo-calcico, tra cui il controllo del PTH, la vitamina D è anche riconosciuta per le sue azioni immunomodulatorie e antinfiammatorie [11].
La vitamina D può infatti agire con meccanismo endocrino (la tipica azione di regolazione del metabolismo osseo), ma anche autocrino-paracrino, grazie alla presenza all'interno delle singole cellule dell'enzima 1-α-idrossilasi in grado di produrre il metabolita attivo $1,25(OH)_2$ vitamina D. Sia il recettore per la vitamina D che l'1-α-idrossilasi sono espressi da diversi tipi di cellule immunitarie tra cui macrofagi, cellule T, cellule dendritiche, monociti e cellule B, e studi preclinici indicano che la vitamina D esercita effetti biologici sia sul sistema immunitario innato che su quello adattativo, tra cui quelli sulla produzione di citochine proinfiammatorie.
È noto che la carenza di vitamina D è associata a un aumento dei livelli sierici di mediatori pro-infiammatori, tra cui IL-6 e TNF-α, che sono correlati sia allo sviluppo che alla progressione di patologie reumatologiche infiammatorie come le SpA. Recentemente abbiamo inoltre osservato che in soggetti sani, ma carenti di vitamina D, la supplementazione con quest'ultima determina una riduzione significativa dei livelli di IL-6 e IL-17 [12].
Il secondo articolo di questo numero è dedicato al dibattito in corso sulla scelta tra colecalciferolo e calcifediolo. Gli Autori concludono che sulla base delle conoscenze di fisiologia e delle attuali evidenze scientifiche il colecalciferolo dovrebbe essere considerato la terapia di prima scelta nella prevenzione e nel trattamento della carenza di vitamina D e che l'uso del calcife-

Corrispondenza
Maurizio Rossini
maurizio.rossini@univr.it

How to cite this article: Rossini M. Editoriale. Vitamin D - UpDates 2023;6(3):84-85.

	Differenze % rispetto ai 31 mesi APRILE 17 - OTTOBRE 19 (PRE NOTA 96)		31 MESI NOVEMBRE 19 - MAGGIO 22 (POST NOTA 96)	
	IN NOTA	ATC 5	Numero confezioni	Spesa lorda
Alfacalcidolo	NO	A11CC03	45,9%	54,5%
Calcitriolo	NO	A11CC04	-4,8%	-3,9%
Colecalciferolo	SI	A11CC05	-21,3%	-16,4%
Calcifediolo	SI	A11CC06	41,1%	49%
Colecalcif. + calcio	SI	A12AX	-27,1%	-28,9%
		TOTALE ATC IN NOTA	**-19,6%**	**-15,7%**
		TOTALE ATC NON IN NOTA	**8,5%**	**18,2%**

IN NOTA	
lorda mensile ATC media POST	21.341.970
lorda mensile ATC media ANTE	25.331.506
RISPARMIO MEDIO MENSILE	**3.989.536**
NON IN NOTA	
lorda mensile ATC media POST	2.027.640
lorda mensile ATC media ANTE	1.714.870
AGGRAVIO MEDIO MENSILE	**312.770**

Risparmio medio mensile osservato negli ultimi 19 mesi nelle ATC in nota: 2.807.326

FIGURA 1.
NOTA 96 – Monitoraggio andamento dei consumi della nota relativa alla vitamina D. Ufficio Monitoraggio della Spesa Farmaceutica e Rapporti con le Regioni. Agenzia Italiana del Farmaco (AIFA). Ultimo dato analizzato: maggio 2022. Analisi su 31 mesi dopo l'introduzione della nota (https://www.aifa.gov.it/documents/20142/1030827/NOTA_96_31mesi_08.11.2022.pdf).

diolo dovrebbe essere limitato a situazioni particolari, quali per esempio sindromi da malassorbimento, obesità di grado severo o insufficienza epatica.
Anche nelle "Particolari avvertenze" della Nota 96 dell'Agenzia Italiana del Farmaco (AIFA) [13] si precisa che le principali prove di efficacia antifratturativa sono state conseguite utilizzando colecalciferolo, che risulta essere la molecola di riferimento per tale indicazione e che la documentazione clinica in questa area di impiego per gli analoghi idrossilati è molto limitata. Dovrebbe preoccupare pertanto che dal monitoraggio di AIFA dei consumi di vitamina D in seguito alla Nota 96 [14], a fronte di un risparmio di spesa per la riduzione nell'uso di colecalciferolo, emerga un aumento del consumo di calcifediolo e di alfacalcidiolo, trascurabile dal punto di vista economico ma non da quello dell'appropriatezza (Fig. 1).
Cosa ne pensate?
Buona lettura

Bibliografia

1. Orsolini G, Adami G, Rossini M, et al. Parathyroid hormone is a determinant of serum Dickkopf-1 levels in ankylosing spondylitis. Clin Rheumatol 2018;37:3093-3098. https://doi.org/10.1007/s10067-018-4205-0
2. Rossini M, Viapiana O, Idolazzi L, et al. Higher level of Dickkopf-1 is associated with low bone mineral density and higher prevalence of vertebral fractures in patients with ankylosing spondylitis. Calcif Tissue Int 2016;98:438-445. https://doi.org/10.1007/s00223-015-0093-3.
3. Fassio A, Idolazzi L, Viapiana O, et al. In psoriatic arthritis Dkk-1 and PTH are lower than in rheumatoid arthritis and healthy controls. Clin Rheumatol 2017;36:2377-2381. https://doi.org/10.1007/s10067-017-3734
4. Fassio A, Gatti D, Rossini M, et al. Secukinumab produces a quick increase in WNT signalling antagonists in patients with psoriatic arthritis. Clin Exp Rheumatol 2019;37:133-136.
5. Fassio A, Atzeni F, Rossini M, et al. Osteoimmunology of spondyloarthritis. Int J Mol Sci 2023, in press.
6. Rotondo C, Cantatore FP, Cici D, et al. Vitamin D status and psoriatic arthritis: association with the risk for sacroiliitis and influence on the retention rate of methotrexate monotherapy and first biological drug survival-A retrospective study. Int J Mol Sci 2023;10;24:5368. https://doi.org/10.3390/ijms24065368
7. Touma Z, Eder L, Zisman D, et al. Seasonal variation in vitamin D levels in psoriatic arthritis patients from different latitudes and its association with clinical outcomes. Arthritis Care Res (Hoboken) 2011;63:1440-7. https://doi.org/10.1002/acr.20530
8. Kincse G, Bhattoa PH, Herédi E, et al. Vitamin D3 levels and bone mineral density in patients with psoriasis and/or psoriatic arthritis. J Dermatol 2015;42:679-684. https://doi.org/10.1111/1346-8138.12876
9. Gamonal SBL, Gamonal ACC, Marques NCV, et al. Is vitamin D status relevant to psoriasis and psoriatic arthritis? A retrospective cross-sectional study. Sao Paulo Med J 2022;141:e2022216. https://doi.org/10.1590/1516-3180.2022.0216.R1.01072022
10. Diao M, Peng J, Wang D, et al. Peripheral vitamin D levels in ankylosing spondylitis: a systematic review and meta-analysis. Front Med (Lausanne) 2022;9:972586. https://doi.org/10.3389/fmed.2022.972586
11. Giannini S, Giusti A, Minisola S, et al. The immunologic profile of Vitamin D and Its role in different immune-mediated diseases: an expert opinion. Nutrients 2022;14:473. https://doi.org/10.3390/nu14030473
12. Fassio A, Gatti D, Rossini M, et al. Effects on serum inflammatory cytokines of cholecalciferol supplementation in healthy subjects with vitamin D deficiency. Nutrients 2022;14:4823. https://doi.org/10.3390/nu14224823
13. Nota AIFA 96. https://www.gazzettaufficiale.it/eli/id/2023/02/20/23A00990/SG
14. Monitoraggio Nota 96. https://www.aifa.gov.it/documents/20142/1030827/NOTA_96_31mesi_08.11.2022.pdf

VITAMIN D
UpDates
2023;6(3):86-89
https://doi. org/10.30455/2611-2876-2023-5

Il ruolo della vitamina D nelle malattie dermatologiche

Mattia Mazzariol, Paolo Gisondi
Dipartimento di Medicina, Sezione di Dermatologia e Venereologia, Università di Verona

INTRODUZIONE

La vitamina D è di grande interesse anche in ambito dermatologico. Tra questa e la cute esiste un duplice rapporto, infatti, da un lato è sintetizzata dai cheratinociti in risposta all'esposizione solare e dall'altro agisce attivamente sulla cute stessa. A tale processo bidirezionale è stato dato il nome di sistema fotoendocrino della vitamina D [1].

Da un punto di vista biochimico la cute sintetizza il pro-ormone vitamina D_3 (colecalciferolo) attraverso l'interazione tra 7-deidrocolesterolo e la luce ultravioletta. Tale processo riesce a soddisfare fino all'80% del nostro fabbisogno giornaliero. Numerosi sono i fattori che influenzano la capacità della cute di sintetizzare la vitamina D e tra i più importanti ci sono latitudine, stagionalità, fototipo e modalità di esposizione solare [2].

Una percentuale minoritaria del fabbisogno, pari al 20%, è assunta tramite l'alimentazione in forma di vitamina D_2 (ergocalciferolo), presente in frutta e verdura, e vitamina D_3, contenuta in quantità elevate soprattutto in salmone e aringa. La vitamina D_3, biologicamente inattiva, viene convertita a livello epatico in 25-idrossi-vitamina D_3 (calcifediolo), la forma maggiormente presente nel circolo sistemico. Il calcifediolo è nuovamente idrossilato a livello renale in 1,25-diidrossi-vitamina D_3 (calcitriolo) la quale, interagendo con specifici recettori nucleari, denominati *Vitamin D Receptor* (VDR), è il principale mediatore degli effetti biologici di questa molecola (Fig. 1) [3].

La vitamina D svolge attività fondamentali sul tessuto osseo, regolando l'omeostasi fosfo-calcica e una carenza della stessa causa osteomalacia, osteoporosi e maggiore predisposizione a fratture ossee.

Gli effetti di questa vitamina non sono tuttavia limitati allo scheletro e si hanno crescenti evidenze sulle sue ubiquitarie proprietà antiproliferative e immunomodulanti. Una carenza di vitamina D è stata documentata in diverse patologie cardiovascolari, oncologiche, neurologiche, autoimmuni e infettive [2,4].

Di particolare interesse sono le molteplici funzioni che la vitamina D esplica a livello cutaneo. Agendo sui cheratinociti mediante un meccanismo autocrino e paracrino, ne controlla la differenziazione e la proliferazione e ne stimola la produzione di ceramidi, che sono dei lipidi essenziali per mantenere l'idratazione cutanea [1]. La vitamina D svolge, inoltre, un ruolo importante nella difesa contro le infezioni cutanee inducendo la produzione di peptidi antimicrobici, quali catelicidina LL-37 e beta-defensina [5]. La vitamina D esercita una rilevante funzione immunomodulatoria, inibendo la presentazione antigenica da parte delle cellule di Langerhans e la proliferazione sia di linfociti B che T, inducendo complessivamente uno *shift* da una risposta di tipo Th1 a una risposta Th2. Inibisce la produzione di citochine proinfiammatorie, quali IL-1, -6, -8, -12, TNF-alfa e interferon-gamma, inducendo invece la produzione di citochine antinfiammatorie, quali IL-10, e la differenziazione di cellule T regolatorie [1].

Tra le principali patologie dermatologiche associate a deficit di vitamina D sono comprese sia le neoplasie della cute sia alcune tra le più frequenti patologie immunomediate, quali la dermatite atopica, la psoriasi e la vitiligine.

NEOPLASIE CUTANEE

La vitamina D è coinvolta nella differenziazione, maturazione e senescenza cellulare e ha un effetto inibitorio sulla neoangiogenesi e oncogenesi [6]. Tuttavia, l'associazione tra deficit di vitamina D e neoplasie cutanee è controversa perché i dati raccolti dagli studi sono contrastanti [3]. L'esposizione solare è allo stesso tempo uno dei principali fattori di rischio per questo tipo di neoplasia ma anche la principale fonte di colecalciferolo. Per lo stesso motivo la fotoprotezione raccomandata dalle linee guida dermatologiche con lo scopo di prevenire fotoinvecchiamento e fotocarcinogenesi potrebbe, in linea teorica, determinare una minore produzione di vitamina D a livello cutaneo [1]. Le evidenze attuali sembrano suggerire che tale fenomeno sia improbabile con

Corrispondenza
Paolo Gisondi
paolo.gisondi@univr.it

Conflitto di interessi
Gli Autori dichiarano nessun conflitto di interessi.

How to cite this article: Mazzariol M, Gisondi P. Il ruolo della vitamina D nelle malattie dermatologiche. Vitamin D – Updates 2023;6(3):86-89. https://doi.org/10.30455/2611-2876-2023-5

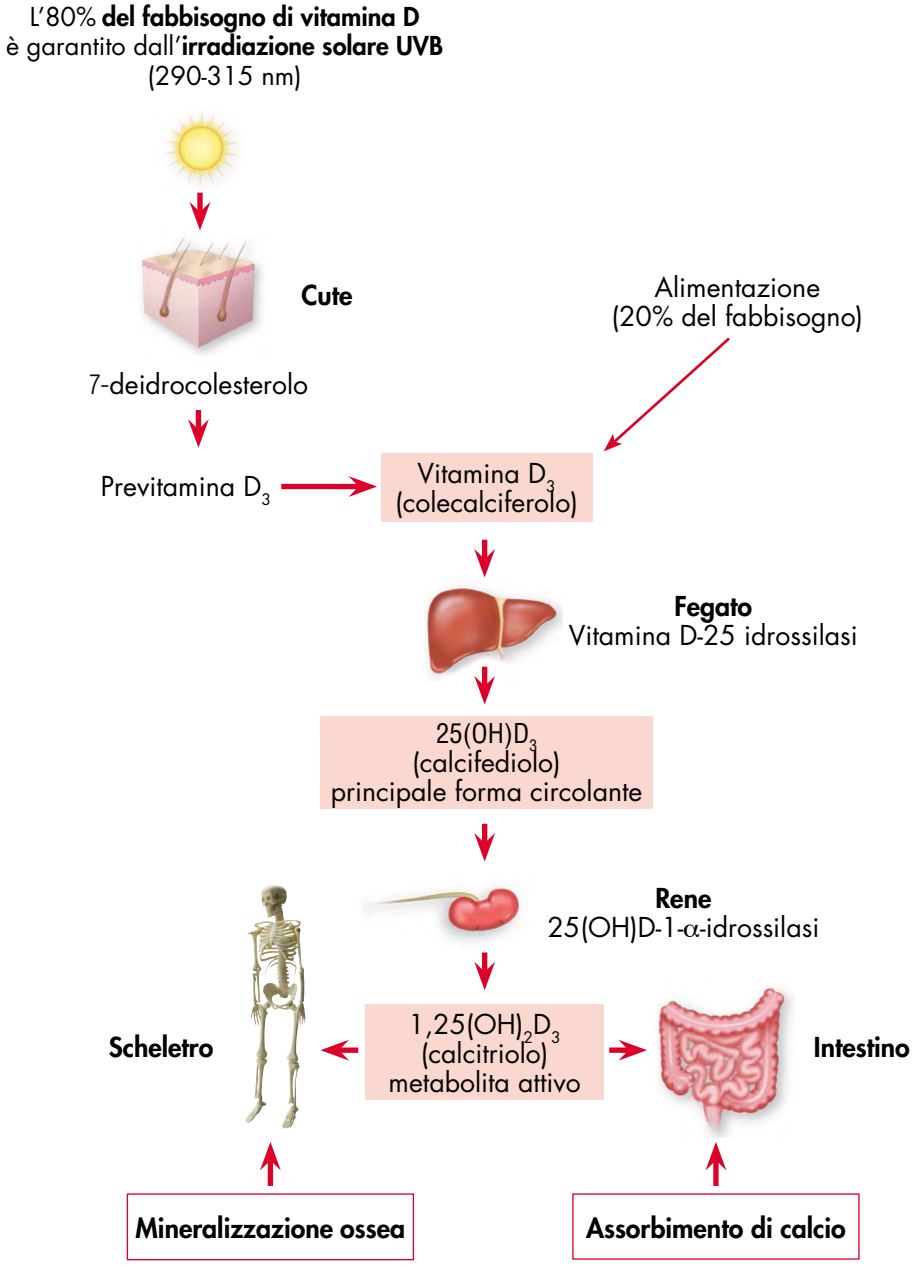

FIGURA 1.
Sintesi e metabolismo della vitamina D [3].

i comuni filtri solari. Non sono disponibili validi studi che abbiano definito il rapporto tra esposizione solare, fotoprotezione, livelli di vitamina D e rischio di neoplasie [2].
La vitamina D potrebbe essere coinvolta nello sviluppo di *Non Melanoma Skin Cancer* (NMSC), tumori che hanno come cellula di origine il cheratinocita e si manifestano come noduli eritematosi, talora ulcerati, in genere nelle zone fotoesposte (volto, cuoio capelluto, dorso). Più specificatamente è stato osservato che la vitamina D ha la proprietà di inibire la via di segnale Hedgehog, la quale ha un ruolo chiave nello sviluppo di carcinomi basocellulari (BCC) [2]. I dati clinici presenti in letteratura sono tuttavia contrastanti, talora associando positivamente e talvolta negativamente livelli sierici di vitamina D e incidenza di NMSC, sia BCC che carcinomi squamocellulari. È stata persino osservata un'associazione positiva tra NMSC ed elevati livelli sierici di vitamina D, ma non tra NMSC e supplementazione orale [7].

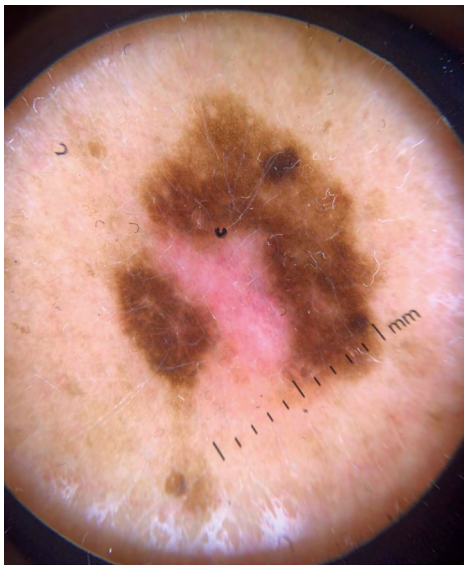

FIGURA 2.
Melanoma maligno della cute. Immagine in epiluminescenza (ingrandimento ottico 10X).

Il melanoma cutaneo (Fig. 2) è un tumore che deriva dalla trasformazione neoplastica dei melanociti che fanno parte, insieme ai cheratinociti, dell'epidermide e hanno il compito di produrre melanina, un pigmento che protegge dagli effetti dannosi dei raggi ultravioletti solari. Per quanto riguarda il melanoma studi in vitro hanno dimostrato che la vitamina D e i suoi metaboliti sono in grado di inibire la proliferazione di cellule di melanoma sia in modelli animali che umani [6]. Tale effetto sembra in parte dipendere dall'espressione di VDR all'interno delle cellule neoplastiche e dalla presenza di specifici polimorfismi di singolo nucleotide a livello del gene codificante [6]. I risultati, sebbene talvolta contrastanti, sembrano suggerire un'associazione clinica tra bassi livelli sierici di vitamina D e insorgenza, progressione e outcome del melanoma [8,9]. In particolare, l'ipovitaminosi sembra rivestire un ruolo significativo per i melanomi insorti in sedi non fotoesposte, i quali spesso presentano una prognosi peggiore. Tale risultato potrebbe dipendere non solo da un ritardo diagnostico ma anche da un effetto protettivo mediato dalla vitamina D a livello delle aree fotoesposte [10].
Non sono ancora disponibili dati conclusivi su possibili effetti di prevenzione delle neoplasie cutanee mediante supplementazione orale di vitamina D [1,2].

DERMATITE ATOPICA

La dermatite atopica (DA) è la più frequente malattia infiammatoria cutanea. È caratterizzata da un'eziologia multifattoriale comprendente fattori di predisposizione genetica, alterazione della funzione di barriera cutanea, tra cui un difetto della filaggrina, e risposta immunitaria Th2. La vitamina D possiede capacità sia immunomodulatoria che di stimolazione della produzione di filaggrina. La DA è stata associata a ipovitaminosi D sia nell'adulto che nel bambino [5]. Questo dato è coerente con il dato epidemiologico che entrambe queste condizioni presentano un'incidenza maggiore all'aumentare della latitudine e di conseguenza con una ridotta esposizione solare. È stato inoltre osservato che bambini affetti da DA presentano un miglioramento clinico in seguito a migrazione verso latitudini inferiori [11]. La scarsa esposizione alla luce solare durante i mesi invernali potrebbe in parte spiegare le esacerbazioni di malattia che avvengono comunemente nei mesi freddi, mentre in genere la DA tende a migliorare in estate. Inoltre, la DA presenta un aumentato rischio di infezioni da *Staphylococcus aureus* correlato a minori livelli cutanei di peptide LL-37, la cui sintesi è indotta dalla vitamina D [2]. Nella DA la supplementazione orale ha mostrato un miglioramento degli indici di gravità della malattia e anche una diminuzione della colonizzazione cutanea da parte di *Staphylococcus aureus* [5].

PSORIASI

La psoriasi è una patologia cutanea infiammatoria cronica che trova i suoi caratteri anatomopatologici distintivi in un'eccessiva proliferazione cheratinocitaria, una differenziazione anomala degli stessi e la compresenza di un importante infiltrato infiammatorio (Fig. 3). Tutti processi in cui la vitamina D riveste un ruolo biologicamente importante [12]. Numerosi studi hanno identificato un'associazione tra bassi livelli sierici di calcifediolo e psoriasi con una correlazione inversa statisticamente significativa tra l'entità del deficit e la gravità della psoriasi [12,13]. Altri studi hanno riscontrato una diminuzione del rischio di sviluppare psoriasi con l'aumentare dei livelli sierici di vitamina D [14]. Il suo effetto terapeutico in questa patologia è noto da decenni e infatti farmaci analoghi topici della vitamina D, quali calcipotriolo e calcitriolo, sono comunemente utilizzati nel trattamento locale della psoriasi spesso in combinazione con un corticosteroide. Tali farmaci hanno la proprietà non solo di inibire la proliferazione e aumentare la differenziazione dei cheratinociti ma anche quella di modulare la risposta immunitaria, agendo direttamente sull'eziopatogenesi della placca psoriasica su più livelli [1]. L'evidenza che una supplementazione orale di vitamina D possa essere di beneficio per il paziente psoriasico è ancora dibattuta [12].

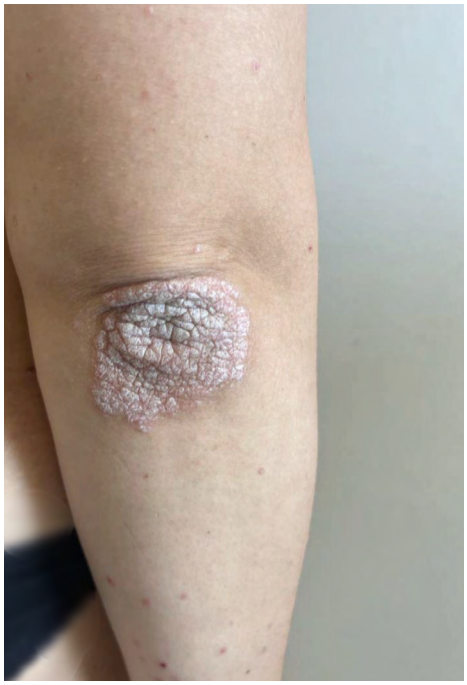

FIGURA 3.
Placca eritemato-squamosa a margini netti di forma rotondeggiante localizzata al gomito, in una paziente con psoriasi.

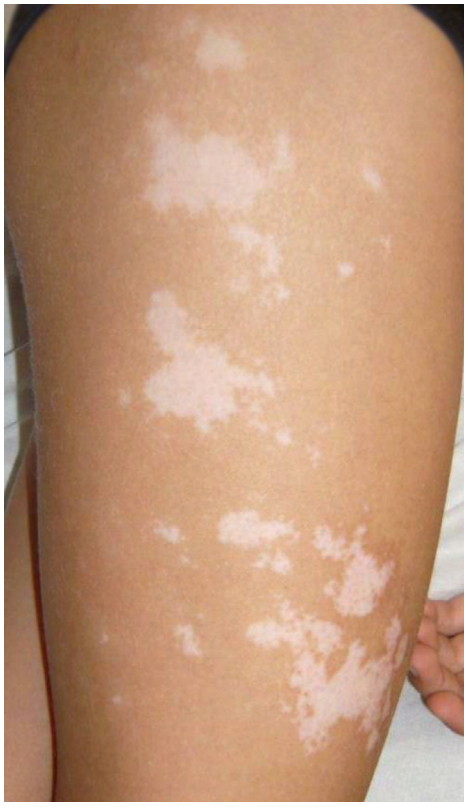

FIGURA 4.
Macule acromiche a margini netti della coscia dx da riferire a vitiligine.

VITILIGINE

La vitiligine è una patologia acquisita di natura autoimmunitaria che ha come bersaglio i melanociti epidermici. Si manifesta con delle macule acromiche, prive di pigmento melanico (Fig. 4). La vitamina D_3 aumenta l'attività della tirosinasi e la melanogenesi tramite il recettore nucleare dell'ormone – il recettore della vitamina D nei melanociti. La tirosinasi catalizza la trasformazione ossidativa della tiroxina in diidrossifenilalanina, da cui poi si formano le melanine. È stato anche riportato che la forma attiva della vitamina D diminuisce l'attività apoptotica nei melanociti indotta dai raggi ultravioletti di tipo B. Come molte altre patologie autoimmuni, anche la vitiligine è associata a bassi livelli di vitamina D, sebbene non sia ancora chiaro il meccanismo alla base [1,15]. Non è stata dimostrata una correlazione diretta tra la carenza della vitamina D e la gravità e/o estensione della vitiligine sulla superficie corporea. È stato invece osservato che la supplementazione di vitamina D in pazienti carenti con vitiligine ha portato a una diminuzione delle dimensioni delle lesioni dopo 6 mesi di trattamento rispetto al controllo, ovvero pazienti che hanno ricevuto solo terapia topica cortisonica. Ci sono dei dati preliminari che suggeriscono che l'applicazione topica degli analoghi della vitamina D possa esercitare un effetto terapeutico nei pazienti con vitiligine. Infatti, è stato osservato che l'uso aggiuntivo di calcipotriolo o tacalcitolo topico rispetto a NB-UVB può esercitare un effetto terapeutico sinergico nella vitiligine [16].
Altre possibili associazioni tra patologie cutanee e vitamina D sono in fase di studio per quanto riguarda ad esempio il lupus eritematoso sistemico, la sclerosi sistemica, l'alopecia areata, la micosi fungoide, l'eruzione polimorfa solare e l'ittiosi [1].

CONCLUSIONI

La vitamina D svolge un ruolo fondamentale nella salute della pelle e il suo deficit può concorrere nella patogenesi di alcune malattie cutanee, sia neoplastiche che immunomediate [14].

L'esposizione al sole sicuramente può incrementare i livelli di vitamina D ma al contempo costituisce un fattore di rischio e pertanto la fotoprotezione rimane un elemento fondamentale nel prevenire i tumori cutanei [2]. L'esposizione solare rappresenta uno strumento utile se utilizzato correttamente, tramite il ricorso a filtri solari ed evitando il conseguente eritema, il quale è un noto marker di danno al DNA [2].

La carenza di vitamina D è associata a una sopravvivenza complessiva significativamente peggiore dei pazienti affetti da melanoma. La sopravvivenza a 5 anni è del 90% se i livelli sierici di vitamina D superano la soglia di 10 ng/ml, ma scende all'84% se i livelli scendono sotto la soglia.

Particolarmente interessanti sono anche gli studi con gli eczemi, come la DA, perché essi sono molto frequenti nella popolazione adulta e pediatrica. Livelli elevati di vitamina D nel sangue del cordone ombelicale sono stati associati a una ridotta prevalenza di eczema a/vicino all'età di un anno [16].

La supplementazione orale di vitamina D è indicata per la correzione e la prevenzione della ipovitaminosi D nella popolazione generale e nei pazienti con malattie della pelle. Non ci sono ancora dati consolidati che confermino il suo ruolo nel trattamento di patologie dermatologiche in assenza di una carenza documentata [12].

Bibliografia

1 Bergqvist C, Ezzedine K. Vitamin D and the skin: what should a dermatologist know? G Ital Dermatol Venereol 2019;154:669-680. https://doi.org/10.23736/S0392-0488.19.06433-2

2 Kechichian E, Ezzedine K. Vitamin D and the skin: an update for dermatologists. Am J Clin Dermatol 2018;19:223-235. https://doi.org/10.1007/S40257-017-0323-8

3 Gisondi P, Romanelli M, Dini V, et al. Deficit di vitamina D in dermatologia - Linee guida e raccomandazioni Sidemast. Published online 2015.

4 Autier P, Mullie P, Macacu A, et al. Effect of vitamin D supplementation on non-skeletal disorders: a systematic review of meta-analyses and randomised trials. Lancet Diabetes Endocrinol 2017;5:986-1004. https://doi.org/10.1016/S2213-8587(17)30357-1

5 Bellinato F, Gisondi P. The role of vitamin D in atopic dermatitis. Vitamin D UpDates 2021;4:4-7. https://doi.org/10.30455/2611-2876-2021-1e

6 Paolino G, Moliterni E, Corsetti P, et al. Vitamin D and melanoma: state of the art and possible therapeutic uses. G Ital Dermatol Venereol 2019;154:64-71. https://doi.org/10.23736/S0392-0488.17.05801-1

7 Liang G, Nan H, Qureshi AA, et al. Pre-diagnostic plasma 25-hydroxyvitamin D levels and risk of non-melanoma skin cancer in women. PLoS One 2012;7(4). https://doi.org/10.1371/JOURNAL.PONE.0035211

8 Ombra MN, Paliogiannis P, Doneddu V, et al. Vitamin D status and risk for malignant cutaneous melanoma: recent advances. Eur J Cancer Prev 2017;26:532-541. https://doi.org/10.1097/CEJ.0000000000000334

9 Caini S, Boniol M, Tosti G, et al. Vitamin D and melanoma and non-melanoma skin cancer risk and prognosis: a comprehensive review and meta-analysis. Eur J Cancer 2014;50:2649-2658. https://doi.org/10.1016/J.EJCA.2014.06.024

10 Paolino G, Moliterni E, Didona D, et al. Clinicopathological features, vitamin D serological levels and prognosis in cutaneous melanoma of shield-sites: an update. Medical Oncology 2015;32:1-7. https://doi.org/10.1007/S12032-014-0451-4/METRICS

11 Byremo G, Rød G, Carlsen KH. Effect of climatic change in children with atopic eczema. Allergy 2006;61:1403-1410. https://doi.org/10.1111/J.1398-9995.2006.01209.X

12 Barrea L, Savanelli MC, Di Somma C, et al. Vitamin D and its role in psoriasis: an overview of the dermatologist and nutritionist. Rev Endocr Metab Disord 2017;18:195-205. https://doi.org/10.1007/s11154-017-9411-6

13 Lee YH, Song GG. Association between circulating 25-hydroxyvitamin D levels and psoriasis, and correlation with disease severity: a meta-analysis. Clin Exp Dermatol 2018;43:529-535. https://doi.org/10.1111/CED.13381

14 Ren Y, Liu J, Li W, et al. Causal associations between vitamin D levels and psoriasis, atopic dermatitis, and vitiligo: a bidirectional two-sample mendelian randomization analysis. Nutrients 2022;14:5284. https://doi.org/10.3390/NU14245284/S1

15 Upala S, Sanguankeo A. Low 25-hydroxyvitamin D levels are associated with vitiligo: a systematic review and meta-analysis. Photodermatol Photoimmunol Photomed 2016;32:181-190. https://doi.org/10.1111/PHPP.12241

16 Liu X, Yao Z, Wang Y, Chai L, Zhou X. Vitamin D analogs combined with different types of phototherapy in the treatment of vitiligo: A systematic review of randomized trials and within-patient studies. Int Immunopharmacol 2022;109:108789. https://doi.org/10.1016/j.intimp.2022.108789

VITAMIN D
UpDates
2023;6(3):90-96
https://doi. org/10.30455/2611-2876-2023-6

Colecalciferolo o calcifediolo? Una questione di narrazione!

Andrea Giusti[1], Dario Camellino[2], Giuseppina Tramontano[1], Giulia Botticella[2], Veronica Tomatis,[2] Gerolamo Bianchi[1,2]

[1] SSD Malattie Reumatologiche e del Metabolismo Osseo, Dipartimento delle Specialità Mediche, ASL3, Genova; [2] S.C. Reumatologia, Dipartimento delle Specialità Mediche, ASL3, Genova

Riassunto

Nell'ultimo decennio, le strategie di prevenzione e trattamento della carenza di vitamina D hanno fatto significativi passi avanti grazie ai trial clinici e agli studi di farmaco-cinetica, che hanno anche permesso di definire le proprietà farmacologiche del colecalciferolo e del calcifediolo.
Sebbene il colecalciferolo e il calcifediolo siano spesso considerati e impiegati in modo paritetico nella pratica clinica, esistono numerose e significative differenze, tra loro, sia sul piano farmacologico sia sul piano clinico, di cui è necessario tenere conto nella scelta della strategia più appropriata per il trattamento/prevenzione della carenza di vitamina D, e per la prevenzione delle fratture da fragilità.
In particolare, recentemente, è stato proposto l'uso del calcifediolo quale farmaco di prima scelta, alternativo al colecalciferolo, nel trattamento della carenza di vitamina D, in virtù della sia maggiore potenza e rapidità nel normalizzare la concentrazione della 25-idrossi-vitamina D sierica. Tuttavia, l'approfondita valutazione delle evidenze disponibili, e in particolare degli studi clinici randomizzati e controllati, conferma il primato del colecalciferolo nella prevenzione e nel trattamento della carenza di vitamina D e nella prevenzione primaria e secondaria delle fratture da fragilità nei soggetti osteoporotici in associazione con un farmaco anti-riassorbitivo o osteo-anabolico. Sulla base delle attuali evidenze, pertanto, l'uso del calcifediolo dovrebbe essere limitato a situazioni particolari, quali per esempio sindromi da malassorbimento, obesità di grado severo o insufficienza epatica.

INTRODUZIONE

Gli studi epidemiologici descrivono un'elevata prevalenza di ipovitaminosi D nella popolazione generale adulta e anziana non appropriatamente integrata con supplementi di vitamina D, particolarmente in sottopopolazioni a rischio, quali soggetti fragili o affetti da malattie croniche, pazienti affetti da sindrome da malassorbimento e soggetti istituzionalizzati [1-3].
La vitamina D, e in particolare la sua carenza, gioca un ruolo significativo nella patogenesi delle fratture da fragilità, delle cadute e di numerose condizioni cliniche "extra-scheletriche" acute e croniche (ad es. malattie infettive e COVID-19, malattie reumatologiche, neoplasie, diabete e malattie cardiovascolari) [1-7].
In questo contesto clinico-epidemiologico, come atteso, si è aperto un crescente dibattito internazionale sulle strategie terapeutiche più appropriate per la prevenzione e il trattamento della carenza di vitamina D.[7-12] In particolare, recentemente, il dibattito si è concentrato su un quesito preciso, ovvero se sia più appropriato usare il calcifediolo al posto del colecalciferolo, tradizionalmente impiegato, nel trattamento dell'ipovitaminosi D [9-12]. Numerosi studi randomizzati e controllati (RCTs), e studi di farmaco-cinetica hanno tentato di rispondere a questa domanda, permettendo di ampliare le conoscenze sugli effetti farmacologici e clinici di queste due molecole. Sebbene i risultati degli studi più recenti abbiano permesso di generare evidenze significative e di impatto clinico, i numerosi limiti dei lavori pubblicati, quali ad esempio la scelta di outcome surrogati e l'estrema eterogeneità dei dosaggi impiegati, hanno determinato

Corrispondenza
Andrea Giusti
andreagiusti6613@gmail.com

Conflitto di interessi
Gli Autori dichiarano nessun conflitto di interessi.

How to cite this article: Giusti A, Camellino D, Tramontano G, et al. Colecalciferolo o calcifediolo? Una questione di narrazione! Vitamin D – Updates 2023;6(3):90-96. https://doi. org/10.30455/2611-2876-2023-6

una significativa confusione sull'argomento, determinando una narrazione non sempre appropriata.
Obiettivo della nostra revisione narrativa è quello di riassumere alcune delle caratteristiche farmacologiche e non del colecalciferolo e calcifediolo, riconducendo la narrazione sul piano clinico per definirne il ruolo nella pratica clinica quotidiana.

PRODUZIONE E METABOLISMO DELLA VITAMINA D

Un'approfondita conoscenza della fisiologia e del metabolismo della vitamina D rappresenta il fondamento essenziale e la "condicio sine qua non" per dirimere il quesito di questa revisione, ovvero se sia più appropriato utilizzare il colecalciferolo o il calcifediolo nella pratica clinica.
Con il termine vitamina D normalmente si fa liberamente riferimento sia alla vitamina D_3 (colecalciferolo) di produzione animale e umana, sia alla vitamina D_2 (ergocalciferolo) di produzione vegetale [1,10-12].
La fonte principale di vitamina D per l'organismo dovrebbe essere quella endogena, derivante dalla conversione del 7-deidrocolesterolo a seguito dell'esposizione della cute a raggi ultravioletti di specifica lunghezza d'onda. Questo meccanismo dovrebbe produrre la quota preponderante (circa 80%) di vitamina D (vitamina D_3), per il fabbisogno dell'organismo, mentre quantità minori (circa 20%) di vitamina D3 e vitamina D2 possono essere assunte attraverso la dieta [1].
La produzione cutanea di colecalciferolo è fortemente influenzata dalle stagioni, dalla latitudine, dalle caratteristiche della cute esposta al sole, dall'uso di creme solari e dall'età.[1] Una quota minore di vitamina D_3 può essere assunta attraverso l'alimentazione e in particolare attraverso i grassi animali, mentre è assolutamente trascurabile la quota di vitamina D_2 presente nei grassi vegetali [1]. In alcuni paesi, la libera fortificazione degli alimenti con colecalciferolo ha permesso di incrementare la quota di vitamina D assunta con la dieta, sebbene questa strategia non sempre sia in grado di ottimizzarne l'assunzione [1].
La vitamina D è fortemente liposolubile e questa liposolubilità ne influenza significativamente le caratteristiche farmacologiche. Il suo assorbimento a livello gastrointestinale richiede la presenza di acidi biliari e avviene attraverso il sistema linfatico [1-12]. Una volta entrata nel circolo ematico, la vitamina D viene immagazzinata nel tessuto adiposo, che ne rilascia piccole quantità. Questo è anche uno dei motivi per cui i soggetti obesi siano a maggiore rischio di deficienza, a seguito della "diluizione" in una massa adiposa maggiore [1,11-14]. L'elevata liposolubilità della vitamina D, infine, ne determina anche una prolungata emivita funzionale, stimata essere di circa 2 mesi [12]. La vitamina D rimane poco tempo nel circolo ematico e le sue concentrazioni ematiche sono pertanto molto ridotte (1-2 ng/ ml) [1].
Per diventare metabolicamente attiva la vitamina D deve essere sottoposta a due processi enzimatici di idrossilazione, che avvengono prevalentemente a livello epatico e renale [1,12]. Nel corso del transito epatico, la vitamina D viene convertita in 25-idrossi-vitamina D [25(OH)D] a opera dell'enzima 25-idrossilasi. Il processo di trasformazione della vitamina D in 25(OH)D può avvenire anche in presenza di una riduzione significativa del tessuto epatico funzionante, sebbene sia evidente una più elevata prevalenza di ipovitaminosi D nei pazienti affetti da epatite cronica HCV-correlata [1].
La 25(OH)D, anche detta calcifediolo, ha un'elevata affinità per la proteina legante la vitamina D (*Vitamin D Binding Protein*, VDBP), rappresenta il principale metabolita ematico della vitamina D e, in assoluto, le sue concentrazioni rappresentano l'indice più attendibile dello stato vitaminico D di un soggetto [1]. Il dosaggio della 25(OH)D sierica è un preciso indicatore dei nostri depositi di vitamina D. Pertanto, la definizione dello stato vitaminico D di un soggetto (carenza, insufficienza e sufficienza) si basa al momento esclusivamente sull'interpretazione dei livelli sierici di 25(OH)D (Tab. I).
La 25(OH)D (o calcifediolo) è un metabolita parzialmente idrofilo e si deposita solo a livello epatico e muscolare.1 L'emivita della 25(OH)D è più breve di quella della vitamina D, tale da soddisfare il fabbisogno per non più di 12-18 giorni [1,8]. La 25(OH)D ha una bassa affinità per il recettore specifico della vitamina D (*Vitamin D Receptor*, VDR) e pertanto necessita di essere trasformata in calcitriolo o 1,25-diidrossi-vitamina D [$1,25(OH)_2D$], per diventare metabolicamente attiva [1,8]. È stato stimato che il calcifediolo, ovvero la 25(OH)D, possieda un'affinità per il VDR circa 50 volte inferiore rispetto al calcitriolo o $1,25(OH)_2D$ [15]. Nonostante la minore affinità per il VDR, studi sperimentali recenti hanno dimostrato come il calcifediolo possa produrre attraverso il legame con i recettori nucleari e/o di membrana, effetti cellulari genomici (stimolazione della trascrizione di geni) e non-genomici (formazione di secondi messaggeri cellulari, fosforilazione di alcune proteine) [15].
La conversione in $1,25(OH)_2D$ per opera della 1-α-idrossilasi, avviene prevalentemente a livello renale, ma può essere attuata anche in altri tessuti [1]. La quota più rilevante di $1,25(OH)_2D$, e quella più attinente il controllo del metabolismo minerale, è prodotta nei tubuli prossimali renali. La produzione della $1,25(OH)_2D$ per opera della 1-α-idrossilasi richiede la presenza di ormone paratiroideo (PTH) ed è modulata dai livelli sierici del calcio, del fosforo e del FGF23.[1,12] La $1,25(OH)_2D$ non viene depositato a livello tissutale e ha emivita brevissima [1,8].
L'insufficienza renale riduce progressivamente la produzione di $1,25(OH)_2D$ [1]. Tuttavia, un deterioramento significativo dell'attività della 1-α-idrossilasi, tale da

TABELLA I.
Interpretazione dei livelli sierici di 25(OH)D (da Adami et al., 2011 e Rossini et al., 2016, mod.) [1,2].

Definizione	Unità di misura della 25(OH)D	
	nmol/L	ng/ml
Deficienza severa	< 25	< 10
Deficienza	25-50	10 -20
Insufficienza	50-75	20-30
Range ottimale	75 -125	30-50
Eccesso	> 250	> 100
Intossicazione	> 375	> 150

non essere più in grado di assicurare livelli ormonali normali, è rilevabile solo in presenza di una notevole compromissione della funzione renale (in genere stadio 4-5/5D) [1,16]. Si deve tuttavia sottolineare come, anche in condizioni di severa compromissione dell'attività della 1-α-idrossilasi renale, i livelli di 25(OH)D debbano essere mantenuti nel range di normalità per garantire un adeguato substrato alle 1-α-idrossilasi extra-renali [1,16].

La $1,25(OH)_2D$ (metabolita attivo) legandosi a uno specifico recettore (VDR, presente sia nel nucleo sia nella membrana cellulare), produce l'effetto finale della vitamina D a livello cellulare [1]. Tale effetto si esplica sia attraverso la stimolazione della trascrizione di geni (meccanismo genomico), sia attraverso la formazione di secondi messaggeri cellulari o la fosforilazione di alcune proteine (meccanismo non genomico) [1]. I recettori per la vitamina D sono ubiquitari nell'organismo.

COLECALCIFEROLO, CALCIFEDIOLO E L'ANNOSA QUESTIONE DELLA NORMALIZZAZIONE DELLA CONCENTRAZIONE DELLA 25(OH)D

Oltre alle due forme naturali di vitamina D, la vitamina D_3 (colecalciferolo) e la vitamina D_2 (ergocalciferolo, in disuso), numerosi farmaci/metaboliti con attività vitaminica D si sono resi disponibili nella pratica clinica quotidiana [1,2,8]. Alcuni di essi sono stati sintetizzati e impiegati prevalentemente in ambiti specifici, quali il trattamento dei disordini sistemici del metabolismo minerale nella malattia renale cronica o l'ipoparatiroidismo, e pertanto non hanno rilevanza rispetto al quesito oggetto della nostra revisione. Il colecalciferolo e il calcifediolo invece, come già illustrato, rappresentano le due molecole di gran lunga più investigate e utilizzate per la correzione dell'ipovitaminosi D e per la prevenzione delle fratture da fragilità nella popolazione non-nefropatica.

Colecalciferolo

Il colecalciferolo (D_3) è il naturale composto della vitamina D, di origine animale/umana. Come già descritto, il colecalciferolo è un pro-ormone, precursore delle due forme idrossilate [25(OH)D e $1,25(OH)_2D$] della vitamina D e pertanto ha bisogno di essere sottoposto a due processi naturali di idrossilazione per trasformarsi nella sua forma attiva metabolicamente [1,8].

Il colecalciferolo è fortemente lipofilico. In relazione a questa sua caratteristica l'assorbimento gastrointestinale è influenzato alla presenza di acidi biliari, avviene attraverso il sistema linfatico e può essere significativamente compromesso in presenza di malassorbimento.[12] Sempre in virtù della sua lipofilia, il colecalciferolo è normalmente immagazzinato nel tessuto adiposo, dove crea dei depositi da cui è rilasciato lentamente.[1] Proprio per questo motivo ha un'emivita ematica piuttosto breve (T1/2 stimato di 19-25 ore), ma presenta un'emivita funzionale decisamente più lunga (parecchie settimane) [8]. L'elevata emivita funzionale del colecalciferolo rappresenta uno dei principali punti di forza nell'uso clinico, rendendolo un prodotto estremamente flessibile e adattabile nella pratica, permettendone regimi di somministrazione intermittente [1,2]. Pertanto, se da un lato l'elevata lipofilia rappresenta un vantaggio in relazione all'emivita funzionale, dall'altro può costituire uno svantaggio, come già descritto, nei soggetti obesi (elevata diluizione) e nei pazienti affetti da malassorbimento (ridotto assorbimento intestinale).

Il colecalciferolo è disponibile in formulazioni per uso orale e intramuscolare. A eccezione di condizioni cliniche particolari (sindromi da malassorbimento), la via di somministrazione orale è preferibile, poiché superiore in termini di efficacia nell'incrementare la concentrazione di 25(OH)D sierica rispetto alla formulazione intramuscolare [17,18].

Negli RCTs disegnati per identificare la posologia e il regime terapeutico più appropriato per la normalizzazione e il mantenimento di una concentrazione ottimale di 25(OH)D (30-50 ng/ml), il colecalciferolo è stato impiegato con dosaggi e regimi di somministrazione piuttosto variabili, che spaziano da dosi di 400-4.000 UI al giorno a dosi di 25.000-50.000 UI al mese, utilizzando anche dosi "bolo" terapeutiche fino a 600.000 UI (sconsigliate). In generale, gli RCTs hanno dimostrato una grande eterogeneità di risposta, in termini di incremento della concentrazione della 25(OH)D, alla supplementazione con dosi standard di colecalciferolo. Questa significativa eterogeneità, che rende meno prevedibile la dose-risposta al trattamento, sembrerebbe essere legata a numerosi fattori (alcuni dei quali non completamente chiariti), quali il valore basale di 25(OH)D, l'indice di massa corporea e fattori in grado di condizionarne l'assorbimento intestinale e il metabolismo [12-14,19-20].

Tenendo conto dei fattori interferenti illustrati, e considerando i risultati dei principali RCTs, si può comunque affermare che se impiegato a dosaggi e regimi terapeutici appropriati, il colecalciferolo è in grado di normalizzare efficacemente e mantenere nel range ottimale/desiderabile la concentrazione della 25(OH)D (30-50 ng/ml). L'approccio più appropriato e largamente sostenuto dalle Linee guida italiane, prevede, in caso di severa ipovitaminosi D (< 10 ng/ml), la somministrazione di una dose terapeutica di 3.000-10.000 UI al giorno per 1-2 mesi, seguita da una dose di mantenimento di circa 2.000 UI al giorno [1,2,21]. Nei soggetti con ipovitaminosi D meno severa e nei pazienti candidati a terapia remineralizzante (anti-riassorbitiva o osteo-anabolica), le più recenti Linee guida italiane suggeriscono dosi giornaliere (o equivalenti cumulativi) comprese tra 800 UI e 2.000 UI al giorno (con singola dose massima non eccedente le 100.000 UI) [21].

La principale perplessità sollevata rispetto all'uso del colecalciferolo e ai regimi terapici illustrati, sarebbe la "relativa lentezza" del colecalciferolo nel normalizzare la concentrazione della 25(OH)D in termini assoluti e rispetto al calcifediolo [11-14]. Questo aspetto, come vedremo, rappresenta uno dei principali cavalli di battaglia dei sostenitori dell'uso del calcifediolo nella pratica clinica. In questo contesto, riteniamo pertanto importante enfatizzare i risultati di un recente studio RCT, pubblicato da Fassio et al., che ha messo in discussione il sopracitato postulato [22]. Lo studio di farmaco-cinetica di Fassio et al. [22], investigando l'effetto di tre differenti regimi terapeutici di colecalciferolo (10.000 UI al giorno per 8 settimane seguito da 1.000 UI al giorno per 4 settimane; 50.000 UI a settimana per 12 settimane; 100.000 UI ogni 2 settimane per 12 settimane), ha dimostrato come la supplementazione con colecalciferolo 10.000 UI al giorno per 8 settimane, seguita da 1.000 UI al giorno per 4 settimane, in soggetti sani ipovitaminosici (valore basale 25(OH)D medio 14 ng/ml), fosse in grado in sole due settimane di determinare il raggiungimento del target di concentrazio-

ne della 25(OH)D > 20 ng/ml in tutti i soggetti. Risultati simili sono stati descritti anche per gli altri due regimi terapeutici. Inoltre, dopo 4 settimane di trattamento, la quasi totalità dei soggetti avevano raggiunto un valore di 25(OH)D > 30 ng/ml. Tale regime terapeutico si era dimostrato sicuro, non essendo stati registrati casi in cui la concentrazione della 25(OH)D sierica superava il limite di sicurezza di 100 ng/ml (Tab. I).

In conclusione, sulla base delle evidenze descritte, il colecalciferolo deve essere considerato la terapia di prima scelta nel trattamento e nella prevenzione della ipovitaminosi D.

Calcifediolo

Il calcifediolo [25(OH)D] è il metabolita epatico della vitamina D e grossolanamente si può dire che si differenzia dal colecalciferolo per la presenza di un gruppo idrossillico in posizione C-25 [12]. Nella via metabolica della vitamina D, pertanto, il calcifediolo è un passo avanti rispetto al colecalciferolo verso la forma biologicamente attiva (il calcitriolo) [12].

La 25-idrossilazione conferisce al calcifediolo alcune proprietà che stanno alla base della diversa farmaco-cinetica e farmaco-dinamica e rappresentano il presupposto che ha portato a proporlo come alternativa al colecalciferolo. Essendo più idrofilo, il calcifediolo viene assorbito direttamente nel sistema portale, e non attraverso il sistema linfatico, e non subisce la "diluizione" nel tessuto adiposo. Inoltre, sebbene con minore affinità rispetto al calcitriolo, è in grado di legarsi al VDR e, potenzialmente, di produrre effetti cellulari genomici (stimolazione della trascrizione di geni) e non-genomici (formazione di secondi messaggeri cellulari, fosforilazione di alcune proteine) [15].

Pertanto, il calcifediolo presenterebbe alcuni vantaggi in termini farmacologici e clinici, fortemente enfatizzati, che posso essere schematizzati in cinque punti: 1) maggiore rapidità e potenza (rispetto al colecalciferolo) nell'incrementare la concentrazione della 25(OH)D sierica; 2) curva dose-risposta più lineare e prevedibile rispetto al colecalciferolo, indipendente dalla concentrazione basale della 25(OH)D e da altri fattori; 3) efficacia anche in presenza di compromissione della funzione epatica, non necessitando dell'idrossilazione epatica; 4) efficacia maggiore (rispetto al colecalciferolo) nei soggetti obesi, non essendo sequestrato dal tessuto adiposo; 5) efficacia maggiore nei soggetti affetti da sindrome da malassorbimento, in relazione al diverso meccanismo di assorbimento intestinale (rispetto al colecalciferolo) [12]. Complessivamente, questi aspetti, riassumibili in una maggiore potenza e rapidità del calcifediolo, sono stati avvalorati dai risultati di numerosi RCTs volti a confrontare l'efficacia di colecalciferolo e calcifediolo nel normalizzare la concentrazione della 25(OH)D sierica in soggetti affetti da ipovitaminosi D.[9-14,23-25]

Nel complesso gli studi avrebbero dimostrato che a dosi "definite comparabili", il calcifediolo sarebbe in grado di produrre un più rapido e maggiore incremento della concentrazione della 25(OH)D rispetto al colecalciferolo. In termini di potenza, il calcifediolo presenterebbe una potenza relativa rispetto al colecalciferolo maggiore di circa 2-8 volte. L'estrema variabilità della stima della potenza relativa sarebbe da imputare alle dosi impiegate, al valore basale della concentrazione della 25(OH)D sierica (in grado di influenzare la risposta del colecalciferolo), e alla non lineare curva dose-risposta del colecalciferolo (maggiore incremento della 25(OH)D per valori basali di 25(OH)D molto bassi e viceversa) [11,12]. Pertanto, osservando le curve di crescita della concentrazione della 25(OH)D in corso di terapia con colecalciferolo e calcifediolo appare evidente la maggiore rapidità e potenza del calcifediolo. Tali rilievi sono stati confermati anche in studi condotti in soggetti anziani o in sovrappeso/obesi e in pazienti affetti da sindrome da malassorbimento [13-14,26].

Sulla base di questi risultati, recenti Linee guida italiane, hanno incluso il calcifediolo nelle strategie terapeutiche per il management dell'ipovitaminosi D [21]. In particolare, nei soggetti affetti da osteomalacia o con concentrazione sierica della 25(OH)D < 10 ng/ml, è stato suggerito l'uso del calcifediolo (in alternativa al colecalciferolo) alla dose di 20-40 mcg al giorno per 20-30 giorni, prima di passare alla dose di mantenimento [21]. Tale raccomandazione è stata proposta limitatamente a specifiche condizioni, in cui, in particolare, si ritenga necessaria una rapida normalizzazione della concentrazione della 25(OH)D sierica.

Dai tempi di Esopo, passando da "I Racconti di Canterbury", fino a "Il mercante di Venezia", è noto il proverbio *Non è tutto oro quel che luccica*, espressione che assume particolare rilevanza in questo contesto. L'interpretazione degli studi comparativi tra colecalciferolo e calcifediolo merita infatti di essere integrata con alcune considerazioni volte a correggerne la narrazione, come anche enfatizzato dalle Linee guida italiane e da alcune revisioni della letteratura [10,11,21].

La limitata emivita del calcifediolo (12-18 giorni contro le numerose settimane del colecalciferolo) e il fatto che non sia in grado di determinare una replezione dei depositi di vitamina D (depositandosi solo a livello epatico e muscolare), possono rappresentare un problema in caso di ridotta aderenza o persistenza al trattamento [1,8]. Sebbene siano pochi gli studi pubblicati sugli effetti negativi di una ridotta aderenza/persistenza al trattamento, uno studio recentissimo condotto in pazienti inizialmente ipovitaminosici supplementati con calcifediolo, ha dimostrato come dopo la sospensione del trattamento con calcifediolo sia già evidente, nelle prime settimane, una progressiva e significativa riduzione della concentrazione sierica della 25(OH)D, che tra gli 8-12 mesi si ristabiliva nel range della deficienza [23].

In relazione all'idrossilazione, il calcifediolo è un passo avanti rispetto al colecalciferolo verso la forma biologicamente attiva e pertanto è parzialmente affrancato dai meccanismi fisiologici di controllo del metabolismo della vitamina D [10,21]. Sebbene le segnalazioni di intossicazione (ipercalcemia) siano relativamente poche, e perlopiù correlate a dosaggi inappropriate elevati per errori di assunzione, l'utilizzo del calcifediolo è strettamente vincolato a dosi definite e può in alcune circostanze richiedere un monitoraggio anche frequente dei valori sierici di 25(OH)D e calcio, allo scopo di identificare precocemente una condizione di intossicazione e ipercalcemia [10,21,27]. Sulla base dei dati della letteratura questo rischio è assente con il colecalciferolo, così come non è ritenuto necessario alcun monitoraggio sierologico nel corso del trattamento con la vitamina D_3 [10,21].

Sul piano farmaco-dinamico pochi studi hanno investigato l'effetto del colecalciferolo e del calcifediolo sui metaboliti della vitamina D, sui regolatori dell'omeostasi del calcio e del fosforo, sui marcatori di rimodellamento osseo e sugli inibitori del sistema Wnt [28]. Senza inoltrarsi in dettaglio sull'argomento, è opportuno segnalare come rispetto agli effetti su paratormone (decremento) o marcatori di rimodellamento osseo, i risultati degli studi di confronto non siano univoci nello stabilire una superiorità del cal-

cifediolo sul colecalciferolo (Fig. 1) [23,24,26]. In questo contesto, tuttavia, la criticità più rilevante rispetto all'uso del calcifediolo riguarda l'assenza di evidenze in termini di efficacia antifratturativa.[10,11,21]

COLECALCIFEROLO E CALCIFEDIOLO NELLA PREVENZIONE DELLE FRATTURE

Nell'introduzione alla nostra revisione abbiamo accennato all'importanza della narrazione per dirimere il quesito circa la superiorità del colecalciferolo rispetto al calcifediolo o viceversa. Revisionando la letteratura, infatti, appare estremamente evidente come gli studi RCTs si siano concentrati unicamente su un outcome, sicuramente importante, quale la normalizzazione della concentrazione sierica della 25(OH) D, omettendo sistematicamente di investigare uno degli endpoint più rilevanti del trattamento con la vitamina D, ovvero la riduzione dell'incidenza di fratture da fragilità, per non citare l'effetto sulle cadute e i potenziali effetti extra-scheletrici.

Non è infatti necessaria una ricerca bibliografia approfondita per sostenere l'efficacia anti-fratturativa del colecalciferolo in popolazioni a rischio, carenti di vitamina D, quando impiegato in dosi appropriate (e in associazione alla supplementazione di calcio) [10,11,29].

A fronte di ipertrofiche evidenze in sostegno dell'efficacia anti-fratturativa della supplementazione con colecalciferolo, decisamente limitato è il contributo degli studi RCTs condotti con il calcifediolo. Una recente meta-analisi della Cochrane, che ha revisionato i RCTs di intervento terapeutico (riduzione del rischio di frattura) condotti con la vitamina D e i suoi metaboliti, ha identificato solo due studi con il calcifediolo, ritenuti eleggibili sulla base della qualità del disegno sperimentale [29]. Va rilevato come in entrambi gli studi il rischio di "bias" non fosse valutabile. Sulla base dei risultati di questi due studi si può affermare che non vi siano, al momento, sufficienti evidenze scientifiche per supportare l'efficacia anti-fratturativa del calcifediolo [29,30]. Nel più recente RCT pubblicato da Peacock et al., ad esempio, l'incidenza di nuove fratture vertebrali e non-vertebrali risultava simile nei soggetti trattati per 4 anni con calcio (750 mg al giorno), calcifediolo (15 ug al giorno) o placebo [30].

Per assecondare la corretta narrazione che fa riferimento alla riduzione del rischio di frattura, deve essere evidenziato anche quello che forse è l'aspetto più rilevante di questa storia, ovvero il fatto che in tutti i pivotal RCTs registrativi dei farmaci per la prevenzione delle fratture i pazienti sono stati supplementati con colecalciferolo (e calcio) a dosaggi variabili. Pertanto, l'efficacia anti-fratturativa dei bisfosfonati, del teriparatide, del denosumab e del romosozumab è stata dimostrata in presenza di supplementazione con colecalciferolo e calcio [10,11,21]. Si può concludere, pertanto, che robuste evidenze che inequivocabilmente dimostrino un effetto del calcifediolo sulla riduzione delle fratture sono mancanti.

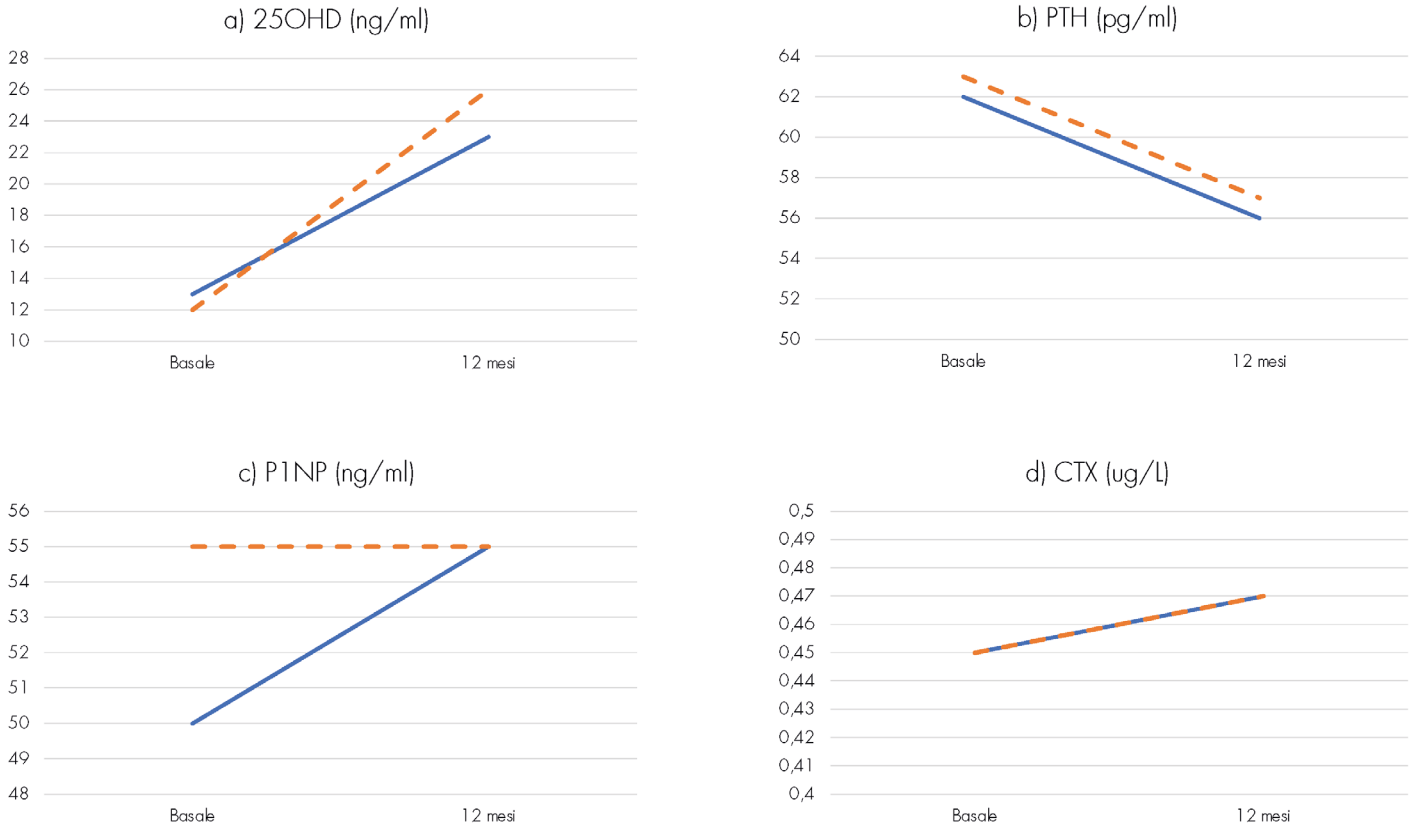

FIGURA 1.
Valore medio basale e a 12 mesi della concentrazione di 25(OH)D (a), PTH (b), P1NP (c) e CTX (d) in pazienti trattati con colecalciferolo (linea continua blu) o calcifediolo (linea tratteggiata arancione) (da Pérez-Castrillón et al., 2023, mod.) [23].

CONCLUSIONI

In conclusione, nella pratica clinica quotidiana il colecalciferolo deve essere considerato la terapia di prima scelta nella prevenzione e nel trattamento della carenza di vitamina D, e nella prevenzione primaria e secondaria delle fratture da fragilità nei soggetti osteoporotici in associazione con un farmaco anti-riassorbitivo o osteo-anabolico. Il calcifediolo potrebbe offrire alcuni vantaggi nei termini di una sua eventuale maggiore rapidità e potenza nell'incrementare e normalizzare la concentrazione sierica della 25(OH)D, sebbene questa affermazione necessiti di ulteriori approfondimenti alla luce del recente lavoro pubblicato da Fassio et al. [22]. Al riguardo è opportuno anche sottolineare come non sia stato chiarito in che termini, questa differente farmaco-cinetica, possa determinare maggiori benefici sul piano clinico (ad es. riduzione del rischio di frattura), in considerazione della mancanza di dati clinici dai RCTs.

Appare quindi inappropriato, come anche riportato nelle Linee guida italiane, considerare il calcifediolo, un farmaco di prima scelta e alternativo al colecalciferolo nella prevenzione/trattamento della ipovitaminosi D e/o nella prevenzione delle fratture da fragilità nei pazienti osteoporotici in associazione con un anti-riassorbitivo o un osteo-anabolico [1,2,21]. Come recentemente suggerito, il calcifediolo, può essere preso in considerazione quale terapia di scelta in situazioni cliniche particolari quali l'obesità, l'epatopatia cronica avanzata e la sindrome da malassorbimento [1,2,21].

Studi clinici randomizzati e controllati saranno necessari per definire l'efficacia del calcifediolo nei diversi setting clinici, in termini di benefici scheletrici ed extra-scheletrici.

Bibliografia

1. Adami S, Romagnoli E, Carnevale V, et al. [Guidelines on prevention and treatment of vitamin D deficiency. Italian Society for Osteoporosis, Mineral Metabolism and Bone Diseases (SIOMMMS)]. Reumatismo 2011;63:129-147.
2. Rossini M, Adami S, Bertoldo F, et al. Guidelines for the diagnosis, prevention and management of osteoporosis. Reumatismo 2016;68:1-39. https://doi.org/10.4081/reumatismo.2016.870
3. Lips P, Cashman KD, Lamberg-Allardt C, et al. Current vitamin D status in European and Middle East countries and strategies to prevent vitamin D deficiency: a position statement of the European Calcified Tissue Society. Eur J Endocrinol 2019;180:P23-P54. https://doi.org/10.1530/EJE-18-0736
4. Giannini S, Giusti A, Minisola S, et al. The Immunologic Profile of Vitamin D and Its Role in Different Immune-Mediated Diseases: An Expert Opinion. Nutrients 2022;14:473. https://doi.org/10.3390/nu14030473
5. Autier P, Boniol M, Pizot C, et al. Vitamin D status and ill health: a systematic review. Lancet Diabetes Endocrinol 2014;2:76-89. https://doi.org/10.1016/S2213-8587(13)70165-7
6. Bischoff-Ferrari HA, Willett WC, Orav EJ, et al. A pooled analysis of vitamin D dose requirements for fracture prevention. N Engl J Med 2012;367:40-49. https://doi.org/10.1056/NEJMoa1109617
7. Avenell A, Mak JC, O'Connell D. Vitamin D and vitamin D analogues for preventing fractures in post-menopausal women and older men. Cochrane Database Syst Rev 2014;(4):CD000227. https://doi.org/10.1002/14651858.CD000227.pub4
8. Mazzaferro S, Goldsmith D, Larsson TE, et al. Vitamin D metabolites and/or analogs: which D for which patient? Curr Vasc Pharmacol 2014;12:339-349. https://doi.org/10.2174/15701611113119990024
9. Jetter A, Egli A, Dawson-Hughes B, et al. Pharmacokinetics of oral vitamin D(3) and calcifediol. Bone 2014;59:14-19.
10. Sosa Henríquez M, Gómez de Tejada Romero MJ. Cholecalciferol or calcifediol in the management of vitamin D deficiency. Nutrients 2020;12:1617. https://doi.org/10.3390/nu12061617
11. Cesareo R, Falchetti A, Attanasio R, et al. Hypovitaminosis D: is it time to consider the use of calcifediol? Nutrients 2019;11:1016. https://doi.org/10.3390/nu11051016
12. Jodar E, Campusano C, de Jongh RT, et al. Calcifediol: a review of its pharmacological characteristics and clinical use in correcting vitamin D deficiency. Eur J Nutr 2023;62:1579-1597. https://doi.org/10.1007/s00394-023-03103-1
13. Charoenngam N, Mueller PM, Holick MF. Evaluation of 14-day concentration-time curves of vitamin D_3 and 25-hydroxyvitamin D_3 in healthy adults with varying body mass index. Anticancer Res 2022;42:5095-5100. https://doi.org/10.21873/anticanres.16019
14. Charoenngam N, Kalajian TA, Shirvani A, et al. A pilot-randomized, double-blind crossover trial to evaluate the pharmacokinetics of orally administered 25-hydroxyvitamin D_3 and vitamin D_3 in healthy adults with differing BMI and in adults with intestinal malabsorption. Am J Clin Nutr 2021;114:1189-1199. https://doi.org/10.1093/ajcn/nqab123
15. Donati S, Palmini G, Aurilia C, et al. Rapid non-genomic actions of 25(OH)D_3: state of the art. Int J Bone Frag 2023;3:27-31. https://doi.org/ 10.57582/IJBF.230301.027
16. Giusti A, Fusaro M. [The treatment of the patient presenting with chronic kidney disease (CKD) and fragility fractures]. G Ital Nefrol 2017;34:2017-vol6.
17. Romagnoli E, Mascia ML, Cipriani C, et al. Short and long-term variations in serum calciotropic hormones after a single very large dose of ergocalciferol (vitamin D2) or cholecalciferol (vitamin D3) in the elderly. J Clin Endocrinol Metab 2008;93:3015-3020. https://doi.org/10.1210/jc.2008-0350
18. Cipriani C, Romagnoli E, Pepe J, et al. Long-term bioavailability after a single oral or intramuscular administration of 600,000 IU of ergocalciferol or cholecalciferol: implications for treatment and prophylaxis. J Clin Endocrinol Metab 2013;98:2709-2715. https://doi.org/10.1210/jc.2013-1586
19. Giusti A, Barone A, Pioli G, et al. Heterogeneity in serum 25-hydroxy-vitamin D response to cholecalciferol in elderly women with secondary hyperparathyroidism and vitamin D deficiency. J Am Geriatr Soc 2010;58:1489-1495. https://doi.org/10.1111/j.1532-5415.2010.02970.x
20. Gallagher JC, Sai A, Templin T 2nd, et al. Dose response to vitamin D supplementation in postmenopausal women: a randomized trial. Ann Intern Med 2012;156:425-437. https://doi.org/10.7326/0003-4819-156-6-201203200-00005
21. Bertoldo F, Cianferotti L, Di Monaco M, et al. Definition, assessment, and management of vitamin D inadequacy: suggestions, recommendations, and warnings from the Italian Society for Osteoporosis, Mineral Metabolism and Bone Diseases (SIOMMMS). Nutrients 2022;14:4148. https://doi.org/10.3390/nu14194148
22. Fassio A, Adami G, Rossini M, et al. Pharmacokinetics of oral cholecalciferol

in healthy subjects with vitamin D deficiency: a randomized open-label study. Nutrients 2020;12:1553. https://doi.org/10.3390/nu12061553

23 Pérez-Castrillón JL, Dueñas-Laita A, Gómez-Alonso C, et al. Long-term treatment and effect of discontinuation of calcifediol in postmenopausal women with vitamin D deficiency: a randomized trial. J Bone Miner Res 2023;38:471-479. https://doi.org/10.1002/jbmr.4776

24 Pérez-Castrillón JL, Dueñas-Laita A, Brandi ML, et al. Calcifediol is superior to cholecalciferol in improving vitamin D status in postmenopausal women: a randomized trial. J Bone Miner Res 2021;36:1967-1978. https://doi.org/10.1002/jbmr.4387

25 Quesada-Gomez JM, Bouillon R. Is calcifediol better than cholecalciferol for vitamin D supplementation? Osteoporos Int 2018;29:1697-1711. https://doi.org/10.1007/s00198-018-4520-y

26 Ruggiero C, Baroni M, Bini V, et al. Effects of weekly supplementation of cholecalciferol and calcifediol among the oldest-old people: findings from a randomized pragmatic clinical trial. Nutrients 2019;11:2778. https://doi.org/10.3390/nu11112778

27 Agencia Española de Medicamentos y Productos Sanitarios (AEMPS). Nota Informativa. Casos Graves de Hipercalcemia por Sobredosificación en Pacientes Adultos y en Pediatría. Fecha de Publicación: 19 de Marzo de 2019. Available online:https://www.aemps.gob.es/informa/notasinformativas/medicamentosusohumano-3/seguridad-1/vitamina-d-casos-graves-de-hipercalcemia-por-sobredosificacion-en-pacientes-adultos-y- en-pediatria/

28 Fassio A, Gatti D, Rossini M, et al. Pharmacodynamics of oral cholecalciferol in healthy individuals with vitamin D deficiency: a randomized open-label study. Nutrients 2021;13:2293. https://doi.org/10.3390/nu13072293

29 Peacock M, Liu G, Carey M, et al. Effect of calcium or 25OH vitamin D3 dietary supplementation on bone loss at the hip in men and women over the age of 60. J Clin Endocrinol Metab 2000;85:3011-3019. https://doi.org/10.1210/jcem.85.9.6836

VITAMIN D
UpDates
2023;6(3):97-128

SELEZIONE BIBLIOGRAFICA

CARDIOLOGIA

- Agarwal P, Agarwal Y, Hameed M. Recent Advances in Association Between Vitamin D Levels and Cardiovascular Disorders. Curr Hypertens Rep. 2023 Aug;25(8):185-209. https://doi.org/10.1007/s11906-023-01246-4. Epub 2023 May 31. PMID: 37256476
- Al-Oanzi ZH, Alenazy FO, Alhassan HH, et al. The Role of Vitamin D in Reducing the Risk of Metabolic Disturbances That Cause Cardiovascular Diseases. J Cardiovasc Dev Dis. 2023 May 11;10(5):209. https://doi.org/10.3390/jcdd10050209. PMID: 37233176
- Alkhatib B, Agraib LM, Al-Dalaeen A, et al. Are There Any Correlations between Vitamin D, Calcium, and Magnesium Intake and Coronary and Obesity Indices? J Am Nutr Assoc. 2023 May 9:1-8. https://doi.org/10.1080/27697061.2023.2203225. Online ahead of print. PMID: 37159492
- Baniasad A, Mokhtari Ardekan A, et al. The relationship between vitamin D and short-term blood pressure variability. Blood Press Monit. 2023 Aug 1;28(4):193-198. https://doi.org/10.1097/MBP.0000000000000652. Epub 2023 Jun 7. PMID: 37404038
- Carbone F, Liberale L, Libby P, et al. Vitamin D in atherosclerosis and cardiovascular events. Eur Heart J. 2023 Jun 20;44(23):2078-2094. https://doi.org/10.1093/eurheartj/ehad165. PMID: 36943351
- Dey SK, Kumar S, Rani D, et al. Implications of vitamin D deficiency in systemic inflammation and cardiovascular health. Crit Rev Food Sci Nutr. 2023 Jun 23:1-18. https://doi.org/10.1080/10408398.2023.2224880. Online ahead of print. PMID: 37350746
- Editors of The Lancet Diabetes & Endocrinology. Expression of Concern-Estimating dose-response relationships for vitamin D with coronary heart disease, stroke, and all-cause mortality: observational and Mendelian randomisation analyses. Lancet Diabetes Endocrinol. 2023 Jul 13:S2213-8587(23)00198-5. https://doi.org/10.1016/S2213-8587(23)00198-5. Online ahead of print. PMID: 37454668
- Gnudi L, Fountoulakis N, Panagiotou A, et al. Effect of active vitamin-D on left ventricular mass index: Results of a randomized controlled trial in type 2 diabetes and chronic kidney disease. Am Heart J. 2023 Jul;261:1-9. https://doi.org/10.1016/j.ahj.2023.03.003. Epub 2023 Mar 17. PMID: 36934979
- Graczyk S, Grzeczka A, Pasławska U, et al. The Possible Influence of Vitamin D Levels on the Development of Atrial Fibrillation-An Update. Nutrients. 2023 Jun 12;15(12):2725. https://doi.org/10.3390/nu15122725. PMID: 37375629
- Hameed I, Malik S, Nusrat K, et al. Effect of vitamin D on postoperative atrial fibrillation in patients who underwent coronary artery bypass grafting: A systematic review and meta-analysis. J Cardiol. 2023 Sep;82(3):220-224. https://doi.org/10.1016/j.jjcc.2023.05.007. Epub 2023 May 24. PMID: 37236436
- Khalaji A, Behnoush AH, Tajdini M. Association between vitamin D deficiency and vasovagal syncope: A systematic review and meta-analysis. Clin Cardiol. 2023 Jul;46(7):721-728. https://doi.org/10.1002/clc.24035. Epub 2023 May 24. PMID: 37226313
- Krysiak R, Basiak M, Machnik G, et al. Vitamin D Status Determines Cardiometabolic Effects of Cabergoline in Women with Elevated Prolactin Levels: A Pilot Study. Nutrients. 2023 May 14;15(10):2303. https://doi.org/10.3390/nu15102303. PMID: 37242186
- Martín Giménez VM, García S, Holick MF, et al. Vitamin D: A Repurposed Anti-Inflammatory Drug At The Cardiovascular Level. Curr Protein Pept Sci. 2023 Jun 22. https://doi.org/10.2174/1389203724666230622162539. Online ahead of print. PMID: 37350007
- Martín Giménez VM, Reiter RJ, Manucha W. Multidrug nanoformulations of vitamin D, anandamide and melatonin as a synergistic treatment for vascular inflammation. Drug Discov Today. 2023 Jun;28(6):103539. https://doi.org/10.1016/j.drudis.2023.103539. Epub 2023 Feb 23. PMID: 36828191

- Parameswaran N. Vitamin D and Its Myriad Disease Associations: Can the Heart be Left Behind? Indian J Crit Care Med. 2023 Jul;27(7):463-464. https://doi.org/10.5005/jp-journals-10071-24491. PMID: 37502292
- Patel L, Vecchia C, Alicandro G. Serum vitamin D and cardiometabolic risk factors in the UK population. J Hum Nutr Diet. 2023 Jun;36(3):1019-1030. https://doi.org/10.1111/jhn.13075. Epub 2022 Sep 11. PMID: 35997254
- Pirrotta F, Cavati G, Mingiano C, et al. Vitamin D Deficiency and Cardiovascular Mortality: Retrospective Analysis "Siena Osteoporosis" Cohort. Nutrients. 2023 Jul 25;15(15):3303. https://doi.org/10.3390/nu15153303. PMID: 37571241
- Rüdiger IH, Andersen MK, Vestergaard AL, et al. Is Vitamin D Deficiency Prothrombotic? A Systematic Review. Semin Thromb Hemost. 2023 Jul;49(5):453-470. https://doi.org/10.1055/s-0042-1756701. Epub 2022 Sep 29. PMID: 36174611
- Sudharma AA, Siginam S, Husain GM, et al. Atrophic remodeling of the heart during vitamin D deficiency and insufficiency in a rat model. J Nutr Biochem. 2023 Sep;119:109382. https://doi.org/10.1016/j.jnutbio.2023.109382. Epub 2023 May 19. PMID: 37209952
- Sun X, Liu N, Sun C, et al. The inhibitory effect of vitamin D on myocardial homocysteine levels involves activation of Nrf2-mediated methionine synthase. J Steroid Biochem Mol Biol. 2023 Jul;231:106303. https://doi.org/10.1016/j.jsbmb.2023.106303. Epub 2023 Mar 28. PMID: 36990164
- Tang L, Zeng H, Yang B, et al. Vitamin D is inversely associated with Monocyte to HDL-C ratio among medical staff in Chengdu, China. BMC Endocr Disord. 2023 Jul 12;23(1):149. https://doi.org/10.1186/s12902-023-01406-2. PMID: 37438744
- Thompson B, Waterhouse M, English DR, et al. Vitamin D supplementation and major cardiovascular events: D-Health randomised controlled trial. BMJ. 2023 Jun 28;381:e075230. https://doi.org/10.1136/bmj-2023-075230. PMID: 37380191
- Tikkanen JT, Soliman EZ, Pester J, et al. A randomized clinical trial of omega-3 fatty acid and vitamin D supplementation on electrocardiographic risk profiles. Sci Rep. 2023 Jul 15;13(1):11454. https://doi.org/10.1038/s41598-023-38344-x. PMID: 37454148
- Virtanen JK, Hantunen S, Lamberg-Allardt C, et al. The effect of vitamin D3 supplementation on atrial fibrillation in generally healthy men and women: The Finnish Vitamin D Trial. Am Heart J. 2023 Jun 10:S0002-8703(23)00143-6. https://doi.org/10.1016/j.ahj.2023.05.024. Online ahead of print. PMID: 37302737
- Wang L, Wang X, Sun M, et al. Oral health and 10-year cardiovascular risk in US adults: mediating role of inflammatory diet and vitamin D. Clin Oral Investig. 2023 Jul;27(7):3405-3413. https://doi.org/10.1007/s00784-023-05097-w. Epub 2023 Jun 5. PMID: 37273020
- Wu Z, Hu H, Wang C, et al. Sleep Patterns Modify the Association between Vitamin D Status and Coronary Heart Disease: Results from NHANES 2005-2008. J Nutr. 2023 May;153(5):1398-1406. https://doi.org/10.1016/j.tjnut.2022.11.028. Epub 2023 Feb 28. PMID: 36863481
- Yoshida K, Mizukami T, Fukagawa M, et al. Effect of vitamin D receptor activators on cardiovascular events in patients on hemodialysis-A post hoc analysis of the LANDMARK study. Ther Apher Dial. 2023 Jun;27(3):523-529. https://doi.org/10.1111/1744-9987.13954. Epub 2022 Dec 7. PMID: 36446713
- Zhang C, Zhu Z. Letter to the editor regarding, "Associations among vitamin D, tobacco smoke, and hypertension: a cross-sectional study of the NHANES 2001-2016" by Wu et al. Hypertens Res. 2023 Jun;46(6):1615. https://doi.org/10.1038/s41440-023-01254-6. Epub 2023 Mar 27. PMID: 36973370
- Zhang X, Sun W, Li N, et al. Causality assessment of circulating Vitamin D level on venous thromboembolism: A Mendelian randomization study. Nutr Metab Cardiovasc Dis. 2023 Sep;33(9):1800-1807. https://doi.org/10.1016/j.numecd.2023.05.019. Epub 2023 May 19. PMID: 37414665

CORONA VIRUS DISEASE

- Abdulameer NA, Eleroui M, Nasser HH, et al. The Vitamin D Binding Protein Gene Polymorphism Association with Covid-19-Infected Iraqi Patients. Cell Mol Biol (Noisy-le-grand). 2023 May 31;69(5):26-31. https://doi.org/10.14715/cmb/2023.69.5.5. PMID: 37571904
- Al-Mohammedawi AKK, Anvari E, Fateh A. Relationship between CDX2 rs11568820 and EcoRV rs4516035 polymorphisms on the vitamin D receptor gene with susceptibility to different SARS-CoV-2 variants. Cell Biol Int. 2023 Jun 27. https://doi.org/10.1002/cbin.12064. Online ahead of print. PMID: 37369952
- Azmi A, Rismani M, Pourmontaseri H, et al. The role of vitamin D receptor and IL-6 in COVID-19. Mol Genet Genomic Med. 2023 Jul;11(7):e2172. https://doi.org/10.1002/mgg3.2172. Epub 2023 Apr 6. PMID: 37025056
- Bajpai R. Methodological issues in designing and reporting of systematic reviews in assessing association between vitamin D supplementation and COVID-19 severity. QJM. 2023 May 27;116(5):406-407. https://doi.org/10.1093/qjmed/hcac179. PMID: 35861421
- Bayrak H, Öztürk D, Bolat A, et al. Association Between Vitamin D Levels and COVID-19 Infection in Children: A Case-Control Study. Turk Arch Pediatr. 2023 May;58(3):250-255. https://doi.org/10.5152/TurkArchPediatr.2023.22217. PMID: 37017281
- Beheshti M, Neisi N, Parsanahad M, et al. Correlation of vitamin D levels with serum parameters in Covid-19 patients. Clin Nutr ESPEN. 2023 Jun;55:325-331. https://doi.org/10.1016/j.clnesp.2023.04.012. Epub 2023 Apr 19. PMID: 37202065
- Bikle DD. Vitamin D and Long Covid: Is there a role in prevention or treatment? J Clin Endocrinol Metab. 2023 Jun 6:dgad338. https://doi.org/10.1210/clinem/dgad338. Online ahead of print. PMID: 37279939
- Charkowick SV, Logothetis CN, Tsay K, et al. A Retrospective Analysis of Vitamin D Levels in Hospitalized COVID-19 Patients With Suspected Pulmonary Embolism. Cureus. 2023 Jul 13;15(7):e41805. https://doi.org/10.7759/cureus.41805. eCollection 2023 Jul. PMID: 37575807
- Cusato J, Manca A, Palermiti A, et al. COVID-19: Focusing on the Link between Inflammation, Vitamin D, MAPK Pathway and Oxidative Stress Genetics. Antioxidants (Ba-

sel). 2023 May 20;12(5):1133. https://doi.org/10.3390/antiox12051133. PMID: 37237997

- Cutolo M, Smith V, Paolino S, et al. Involvement of the secosteroid vitamin D in autoimmune rheumatic diseases and COVID-19. Nat Rev Rheumatol. 2023 May;19(5):265-287. https://doi.org/10.1038/s41584-023-00944-2. Epub 2023 Mar 28. PMID: 36977791

- di Filippo L, Frara S, Giustina A. Response to the Letter to the Editor from Min et al.: Low vitamin D levels are associated with Long COVID syndrome in COVID-19 survivors. J Clin Endocrinol Metab. 2023 Jun 12:dgad327. https://doi.org/10.1210/clinem/dgad327. Online ahead of print. PMID: 37307214

- di Filippo L, Uygur M, Locatelli M, et al. Low vitamin D levels predict outcomes of COVID-19 in patients with both severe and non-severe disease at hospitalization. Endocrine. 2023 Jun;80(3):669-683. https://doi.org/10.1007/s12020-023-03331-9. Epub 2023 Mar 1. PMID: 36854858

- Ducharme FM, Tremblay C, Golchi S, et al. Prevention of COVID-19 with oral vitamin D supplemental therapy in essential healthcare teams (PROTECT): protocol for a multicentre, triple-blind, randomised, placebo-controlled trial. BMJ Open. 2023 May 25;13(5):e064058. https://doi.org/10.1136/bmjopen-2022-064058. PMID: 37230524

- Ekemen Keleş Y, Yılmaz D, Taşar S, et al. Can Serum 25-Hydroxy Vitamin D Levels Predict the Severity of Multisystem Inflammatory Syndrome in Children and COVID-19? J Clin Res Pediatr Endocrinol. 2023 May 29;15(2):190-198. https://doi.org/10.4274/jcrpe.galenos.2023.2022-10-1. Epub 2023 Feb 16. PMID: 36794864

- Feentved Ødum SL, Kongsbak-Wismann M. Vitamin D and SARS-CoV-2. Basic Clin Pharmacol Toxicol. 2023 Jul;133(1):6-15. https://doi.org/10.1111/bcpt.13872. Epub 2023 Apr 17. PMID: 37038047

- Jalavu TP, Sigwadhi LN, Kotze MJ, et al. An investigation of the correlation of vitamin D status and management outcomes in patients with severe COVID-19 at a South African tertiary hospital. IJID Reg. 2023 Jun 1. https://doi.org/10.1016/j.ijregi.2023.05.007. Online ahead of print. PMID: 37363198

- Kapoor N, Kalra S. Coronavirus disease 2019 and vitamin D. Best Pract Res Clin Endocrinol Metab. 2023 Jul;37(4):101791. https://doi.org/10.1016/j.beem.2023.101791. Epub 2023 Jun 19. PMID: 37394290

- Karampinis E, Goudouras G, Ntavari N, et al. Serum vitamin D levels can be predictive of psoriasis flares up after COVID-19 vaccination: a retrospective case control study. Front Med (Lausanne). 2023 May 25;10:1203426. https://doi.org/10.3389/fmed.2023.1203426. eCollection 2023. PMID: 37305120

- Liu Y, Clare S, D'Erasmo G, et al. Vitamin D and SARS-CoV-2 Infection: SERVE Study (SARS-CoV-2 Exposure and the Role of Vitamin D among Hospital Employees). J Nutr. 2023 May;153(5):1420-1426. https://doi.org/10.1016/j.tjnut.2023.03.001. Epub 2023 Mar 5. PMID: 36871833

- Manojlovic M, Ilincic B, Naglic DT, et al. Association between vitamin D hypovitaminosis and severe forms of COVID-19. Eur Rev Med Pharmacol Sci. 2023 Jun;27(11):5318-5326. https://doi.org/10.26355/eurrev_202306_32651. PMID: 37318506

- Martineau AR. Vitamin D in the prevention or treatment of COVID-19. Proc Nutr Soc. 2023 May;82(2):200-207. https://doi.org/10.1017/S0029665122002798. Epub 2022 Nov 11. PMID: 36366796

- Min Y, Wei X, Peng X. Letter to the editor from Min et al.: Low vitamin D levels are associated with Long COVID syndrome in COVID-19 survivors. J Clin Endocrinol Metab. 2023 Jun 12:dgad325. https://doi.org/10.1210/clinem/dgad325. Online ahead of print. PMID: 37307567

- Mingiano C, Picchioni T, Cavati G, et al. Vitamin D Deficiency in COVID-19 Patients and Role of Calcifediol Supplementation. Nutrients. 2023 Jul 30;15(15):3392. https://doi.org/10.3390/nu15153392. PMID: 37571329

- Moghaddam RR, Khorasanchi Z, Noor AR, et al. High-dose vitamin D supplementation is related to an improvement in serum alkaline phosphatase in COVID-19 patients; a randomized double-blinded clinical trial. J Health Popul Nutr. 2023 Jul 25;42(1):71. https://doi.org/10.1186/s41043-023-00409-y. PMID: 37491318

- Moukayed M. A Narrative Review on the Potential Role of Vitamin D3 in the Prevention, Protection, and Disease Mitigation of Acute and Long COVID-19. Curr Nutr Rep. 2023 Jun;12(2):215-223. https://doi.org/10.1007/s13668-023-00471-2. Epub 2023 May 5. PMID: 37145350

- Novakovic V, Benfield T, Jørgensen HL, et al. Vitamin D as a prognostic biomarker in COVID-19: single-center study and meta-analyses. Scand J Clin Lab Invest. 2023 May;83(3):173-182. https://doi.org/10.1080/00365513.2023.2191333. Epub 2023 Apr 17. PMID: 37067370

- Partap U, Sharma KK, Marathe Y, et al. Vitamin D and Zinc Supplementation to Improve Treatment Outcomes among COVID-19 Patients in India: Results from a Double-Blind Randomized Placebo-Controlled Trial. Curr Dev Nutr. 2023 Jul 11;7(8):101971. https://doi.org/10.1016/j.cdnut.2023.101971. eCollection 2023 Aug. PMID: 37560461

- Pludowski P. COVID-19 and Other Pleiotropic Actions of Vitamin D: Proceedings from the Fifth International Conference "Vitamin D-Minimum, Maximum, Optimum" under the Auspices of the European Vitamin D Association (EVIDAS). Nutrients. 2023 May 29;15(11):2530. https://doi.org/10.3390/nu15112530. PMID: 37299493

- Qiu S, Zheng K, Hu Y, et al. Genetic correlation, causal relationship, and shared loci between vitamin D and COVID-19: A genome-wide cross-trait analysis. J Med Virol. 2023 May;95(5):e28780. https://doi.org/10.1002/jmv.28780. PMID: 37212302

- Russo C, Valle MS, Malaguarnera L, et al. Comparison of Vitamin D and Resveratrol Performances in COVID-19. Nutrients. 2023 Jun 5;15(11):2639. https://doi.org/10.3390/nu15112639. PMID: 37299603

- Sanecka M, Youssef M, Abdulsalam M, et al. Hospital Outcomes in Patients Hospitalized for COVID-19 Pneumonia: The Effect of SARS-CoV-2 Vaccination and Vitamin D Status. Nutrients. 2023 Jun 30;15(13):2976. https://doi.org/10.3390/nu15132976. PMID: 37447302

- Shah K, Punnapuzha V, Sharma U, et al. Response to: Methodological issues in designing and reporting of systematic reviews in assessing association between vitamin D supplementation and COVID-19

severity. QJM. 2023 May 27;116(5):408-409. https://doi.org/10.1093/qjmed/hcac178. PMID: 35861424

- Shah K, Varna VP, Sharma U, et al. Response to: A statistical commentary on 'Does vitamin D supplementation reduces COVID-19 severity? A systematic review'. QJM. 2023 Jul 28;116(7):611-612. https://doi.org/10.1093/qjmed/hcad046. PMID: 36971583
- Shahini E, Pesce F, Argentiero A, et al. Corrigendum: Can vitamin D status influence seroconversion to SARS-CoV-2 vaccines? Front Immunol. 2023 May 3;14:1210147. https://doi.org/10.3389/fimmu.2023.1210147. eCollection 2023. PMID: 37207235
- Szarpak L, Feduniw S, Pruc M, et al. The Vitamin D Serum Levels in Pregnant Women Affected by COVID-19: A Systematic Review and Meta-Analysis. Nutrients. 2023 May 31;15(11):2588. https://doi.org/10.3390/nu15112588. PMID: 37299555
- Yigit S, Tural S, Aci R, et al. Vascular endothelial growth factor gene insertion/deletion polymorphism is associated with Vitamin D level in Turkish patients with coronavirus disease 2019. Rev Assoc Med Bras (1992). 2023 Jul 17;69(7):e20221713. https://doi.org/10.1590/1806-9282.20221713. eCollection 2023. PMID: 37466590
- Zhou S, Hu H. A statistical commentary on 'Does vitamin D supplementation reduce COVID-19 severity?: A systematic review'. QJM. 2023 Jul 28;116(7):609-610. https://doi.org/10.1093/qjmed/hcad045. PMID: 36971605
- Zúñiga González M, Roco-Videla Á. [Hip fracture in older adults during pandemic and vitamin D effect]. Nutr Hosp. 2023 Jun 13. https://doi.org/10.20960/nh.04688. Online ahead of print. PMID: 37334788

DERMATOLOGIA

- [No authors listed] Erratum: Serum vitamin D and antinuclear antibody level in oral lichen planus patients: A cross-sectional study: Erratum. Ann Med Surg (Lond). 2023 Jun 21;85(6):3252. https://doi.org/10.1097/MS9.0000000000001026. eCollection 2023 Jun. PMID: 37363591
- AbdElneam AI, Al-Dhubaibi MS, Bahaj SS, et al. The vitamin D receptor gene polymorphism rs1544410 T/T genotype as a predictor of factor vitamin D thresholds deficiency in patients with psoriasis vulgaris-A preliminary study. J Cosmet Dermatol. 2023 May;22(5):1642-1646. https://doi.org/10.1111/jocd.15625. Epub 2023 Jan 31. PMID: 36718826
- Akbaş A, Kılınç F, Şener S, et al. Vitamin D levels in patients with seborrheic dermatitis. Rev Assoc Med Bras (1992). 2023 Jul 17;69(7):e20230022. https://doi.org/10.1590/1806-9282.20230022. eCollection 2023. PMID: 37466593
- Alsenaid A, Al-Dhubaibi MS, Alhetheli G, et al. Trichoscopy pattern and evaluation of serum vitamin D status in alopecia areata. Photodiagnosis Photodyn Ther. 2023 Jun;42:103510. https://doi.org/10.1016/j.pdpdt.2023.103510. Epub 2023 Mar 20. PMID: 36944416
- Bohmann P, Stein MJ, Konzok J, et al. Relationship between genetically proxied vitamin D and psoriasis risk: a Mendelian randomization study. Clin Exp Dermatol. 2023 Jun 5;48(6):642-647. https://doi.org/10.1093/ced/llad095. PMID: 36899474
- Elmelid A, Siekkeri Vandikas M, et al. The Effect of Narrow-Band Ultraviolet B Phototherapy on Free and Total Vitamin D Serum Levels in Mild to Severe Plaque Psoriasis. Biomolecules. 2023 Jun 21;13(7):1018. https://doi.org/10.3390/biom13071018. PMID: 37509054
- Formisano E, Proietti E, Borgarelli C, et al. Psoriasis and Vitamin D: A Systematic Review and Meta-Analysis. Nutrients. 2023 Jul 30;15(15):3387. https://doi.org/10.3390/nu15153387. PMID: 37571324
- Garza-Davila VF, Valdespino-Valdes J, Ramos A, et al. Combination of NB-UVB phototherapy and oral vitamin D supplementation in patients with generalized vitiligo: A randomized, triple-blind, placebo-controlled clinical trial. J Eur Acad Dermatol Venereol. 2023 Jul 17. https://doi.org/10.1111/jdv.19347. Online ahead of print. PMID: 37458536
- Hahn JM, Combs KA, Powell HM, et al. A role for vitamin D and the vitamin D receptor in keloid disorder. Wound Repair Regen. 2023 Jul 17. https://doi.org/10.1111/wrr.13109. Online ahead of print. PMID: 37458255
- Iqbal T, Asim SA, Bhatti S, et al. Association of Vitamin D with Moderate to Severe Acne Vulgaris. J Coll Physicians Surg Pak. 2023 May;33(5):527-530. https://doi.org/10.29271/jcpsp.2023.05.527. PMID: 37190686
- Jenssen M, Furberg AS, Jorde R, et al. Effect of Vitamin D Supplementation on Psoriasis Severity in Patients With Lower-Range Serum 25-Hydroxyvitamin D Levels: A Randomized Clinical Trial. JAMA Dermatol. 2023 May 1;159(5):518-525. https://doi.org/10.1001/jamadermatol.2023.0357. PMID: 36988936
- Karampinis E, Aloizou AM, Zafiriou E, et al. Non-Melanoma Skin Cancer and Vitamin D: The "Lost Sunlight" Paradox and the Oxidative Stress Explanation. Antioxidants (Basel). 2023 May 17;12(5):1107. https://doi.org/10.3390/antiox12051107. PMID: 37237973
- Lu R, Peng Z, Lian P, et al. Vitamin D attenuates DNCB-induced atopic dermatitis-like skin lesions by inhibiting immune response and restoring skin barrier function. Int Immunopharmacol. 2023 Jun 30;122:110558. https://doi.org/10.1016/j.intimp.2023.110558. Online ahead of print. PMID: 37393836
- Nabavizadeh SH, Alyasin S, Esmaeilzadeh H, et al. The effect of vitamin D add-on therapy on the improvement of quality of life and clinical symptoms of patients with chronic spontaneous urticaria. Asian Pac J Allergy Immunol. 2023 Jun;41(2):150-157. https://doi.org/10.12932/AP-021219-0705. PMID: 32828116
- Naushad A, Aziz NI. Vitamin D in Keloids: An alternative to steroids? J Pak Med Assoc. 2023 Jul;73(7):1571. https://doi.org/10.47391/JPMA.8429. PMID: 37469095
- Ocanha Xavier JP, Xavier JCC Jr, da Silva MG, et al. Vitamin D Receptor and Retinoid X Receptor Alpha in Melanocytic Benign Lesions and Melanoma. Am J Dermatopathol. 2023 Jul 28. https://doi.org/10.1097/DAD.0000000000002507. Online ahead of print. PMID: 37506276
- Salem DA, Alghamdi MA, Al-Ghamdi HS, et al. Vitamin D status, vitamin D receptor gene polymorphism, and haplotype in patients with cutaneous leishmaniasis: Correlation with susceptibility and parasite load index. PLoS Negl Trop Dis. 2023 Jun 15;17(6):e0011393. https://doi.

org/10.1371/journal.pntd.0011393. eCollection 2023 Jun. PMID: 37319132

- Salem MW, Adel Abd El Azim A, Galal SA. Efficacy of topical vitamin D combined with microneedling in the treatment of vitiligo: A comparative study. J Cosmet Dermatol. 2023 May;22(5):1521-1527. https://doi.org/10.1111/jocd.15621. Epub 2023 Jan 31. PMID: 36718834

- Schmidt AD, Miciano C, Zheng Q, et al. Involucrin Modulates Vitamin D Receptor Activity in the Epidermis. J Invest Dermatol. 2023 Jun;143(6):1052-1061.e3. https://doi.org/10.1016/j.jid.2022.12.009. Epub 2023 Jan 13. PMID: 36642403

- Shafiq AB, Chowdhury MR, Huda MF, et al. Association of Serum Vitamin D Concentration with the Severity of Patients with Atopic Dermatitis. Mymensingh Med J. 2023 Jul;32(3):666-670. PMID: 37391957

EMATOLOGIA

- Djulejic V, Petrovic B, Jevtic J, et al. The role of cadmium in the pathogenesis of myeloid leukemia in individuals with anemia, deficiencies in vitamin D, zinc, and low calcium dietary intake. J Trace Elem Med Biol. 2023 Sep;79:127263. https://doi.org/10.1016/j.jtemb.2023.127263. Epub 2023 Jul 16. PMID: 37499549

- Ewendt F, Schmitt M, Kluttig A, et al. Association between vitamin D status and eryptosis-results from the German National Cohort Study. Ann Hematol. 2023 Jun;102(6):1351-1361. https://doi.org/10.1007/s00277-023-05239-w. Epub 2023 May 1. PMID: 37121914

- Ismail NH, Mussa A, Al-Khreisat MJ, et al. The Global Prevalence of Vitamin D Deficiency and Insufficiency in Patients with Multiple Myeloma: A Systematic Review and Meta-Analysis. Nutrients. 2023 Jul 20;15(14):3227. https://doi.org/10.3390/nu15143227. PMID: 37513645

- Soepnel LM, Mabetha K, Draper CE, et al. A Cross-Sectional Study of the Associations between Biomarkers of Vitamin D, Iron Status, and Hemoglobin in South African Women of Reproductive Age: the Healthy Life Trajectories Initiative, South Africa. Curr Dev Nutr. 2023 Mar 30;7(5):100072. https://doi.org/10.1016/j.cdnut.2023.100072. eCollection 2023 May. PMID: 37180853

- Thompson B, Lu S, Revilla J, et al. Secondary bile acids function through the vitamin D receptor in myeloid progenitors to promote myelopoiesis. Blood Adv. 2023 Jun 5:bloodadvances.2022009618. https://doi.org/10.1182/bloodadvances.2022009618. Online ahead of print. PMID: 37276450

ENDOCRINOLOGIA

- Al Kiyumi M. Letter to the editor: Vitamin D levels and diabetic foot ulcers: Is there an association? Int Wound J. 2023 May 14. https://doi.org/10.1111/iwj.14234. Online ahead of print. PMID: 37182842

- AlSedairy SA, Al-Harbi LN, Binobead MA, et al. Association of CYP2R1 and CYP27B1 genes with the risk of obesity and vitamin D metabolism in Saudi women. J Genet Eng Biotechnol. 2023 May 15;21(1):59. https://doi.org/10.1186/s43141-023-00508-7. PMID: 37184736

- Bustamante VH, Estrada A, Merchant N. Characteristics of vitamin D deficiency hypocalcemia inpatient admissions at a single tertiary center. J Pediatr Endocrinol Metab. 2023 Jul 13;36(8):749-752. https://doi.org/10.1515/jpem-2023-0201. Print 2023 Aug 28. PMID: 37436141

- Cereijo C, Hooper P, Patel R, et al. Effectiveness of three Vitamin D dosing protocols on raising and maintaining blood serum levels of 25-hydroxyvitamin D over a three-month period: a randomized, prospective study. Eur J Orthop Surg Traumatol. 2023 May;33(4):1201-1207. https://doi.org/10.1007/s00590-022-03272-5. Epub 2022 May 10. PMID: 35538377

- Chen T, Xing X, Huang L, et al. Efficacy and safety of high-dose intramuscular vitamin D2 injection in type 2 diabetes mellitus with distal symmetric polyneuropathy combined with vitamin D insufficiency: study protocol for a multicenter, randomized, double-blinded, and placebo-controlled trial. Front Endocrinol (Lausanne). 2023 Jul 7;14:1202917. https://doi.org/10.3389/fendo.2023.1202917. eCollection 2023. PMID: 37484958

- Corbin KD, Pittas AG, Desouza C, et al. Indices of hepatic steatosis and fibrosis in prediabetes and association with diabetes development in the vitamin D and type 2 diabetes study. J Diabetes Complications. 2023 Jun;37(6):108475. https://doi.org/10.1016/j.jdiacomp.2023.108475. Epub 2023 Apr 12. PMID: 37104979

- D AD, Suran A, Maldar AN, et al. Differences in the Clinical Presentation and Biochemical Profile of the Patients with Primary Hyperparathyroidism with regard to their Serum Vitamin D Levels: a Single-center Experience. Indian J Surg Oncol. 2023 Jun;14(2):301-307. https://doi.org/10.1007/s13193-022-01676-7. Epub 2022 Oct 29. PMID: 37324304

- da Silva AD, Oliveira JS, de Castro IC, et al. Association of vitamin D and cognition in people with type 2 diabetes: a systematic review. Nutr Rev. 2023 Jul 4:nuad085. https://doi.org/10.1093/nutrit/nuad085. Online ahead of print. PMID: 37403328

- Danese VC, Pepe J, Ferrone F, et al. The Mutual Interplay between Bone, Glucose and Lipid Metabolism: The Role of Vitamin D and PTH. Nutrients. 2023 Jun 30;15(13):2998. https://doi.org/10.3390/nu15132998. PMID: 37447323

- Dosi MCMC, McGorum BC, Kirton RD, et al. The effect of season, management and endocrinopathies on vitamin D status in horses. Equine Vet J. 2023 Jul;55(4):672-680. https://doi.org/10.1111/evj.13873. Epub 2022 Sep 2. PMID: 36054781

- Etemadi F, Tabatabaei Naeini A, Aminlari M. Assessment of calcium, phosphorus, magnesium, vitamin D and PTH levels in sera of lame horses. Vet Med Sci. 2023 Jul 19. https://doi.org/10.1002/vms3.1198. Online ahead of print. PMID: 37466035

- Fronczek M, Osadnik T, Banach M. Impact of vitamin D receptor polymorphisms in selected metabolic disorders. Curr Opin Clin Nutr Metab Care. 2023 Jul 1;26(4):316-322. https://doi.org/10.1097/MCO.0000000000000945. Epub 2023 May 19. PMID: 37144463

- Gou Z, Li F, Qiao F, et al. Causal associations between insulin-like growth factor 1 and vitamin D levels: a two-sample bidirectional Mendelian randomization study. Front Nutr. 2023 May 17;10:1162442. https://doi.org/10.3389/fnut.2023.1162442. eCollection 2023. PMID: 37266131

- Grove-Laugesen D, Ebbehoj E, Watt T, et al. Effect of Vitamin D Supplementation on Graves' Disease: The DAGMAR Trial. Thyroid. 2023 Jun 26. https://doi.org/10.1089/thy.2023.0111. Online ahead of print. PMID: 37218433

- Gu X, Zhang D, Gao Z, et al. Correlations of polymorphisms of vitamin D receptor genes ApaI and BsmI with diabetic retinopathy. Panminerva Med. 2023 Jun;65(2):275-277. https://doi.org/10.23736/S0031-0808.21.04365-2. Epub 2021 May 28. PMID: 34047520
- Gverović Antunica A, Znaor L, Ivanković M, et al. Vitamin D and Diabetic Retinopathy. Int J Mol Sci. 2023 Jul 27;24(15):12014. https://doi.org/10.3390/ijms241512014. PMID: 37569392
- Hammad R, Abdel Wahab MA, Farouk N, et al. Non-classical monocytes frequency and serum vitamin D3 levels are linked to diabetic foot ulcer associated with peripheral artery disease. J Diabetes Investig. 2023 Jul 2. https://doi.org/10.1111/jdi.14048. Online ahead of print. PMID: 37394883
- Hands JM, Corr PG, Frame LA. Clarifying the Heterogeneity in Response to Vitamin D in the Development, Prevention, and Treatment of Type 2 Diabetes Mellitus: A Narrative Review. Int J Environ Res Public Health. 2023 Jun 20;20(12):6187. https://doi.org/10.3390/ijerph20126187. PMID: 37372772
- Hsia DS, Nelson J, Vickery EM, et al. Effect of vitamin D on regression to normal glucose regulation and individual glycemic measures: A secondary analysis among participants adherent to the trial protocol in the randomized clinical trial vitamin D and type 2 diabetes (D2d) study. Diabetes Res Clin Pract. 2023 Aug;202:110792. https://doi.org/10.1016/j.diabres.2023.110792. Epub 2023 Jun 19. PMID: 37343726
- Huang W, Gu L, Wang J, et al. Causal association between vitamin D and diabetic neuropathy: a Mendelian randomization analysis. Endocrine. 2023 May;80(2):328-335. https://doi.org/10.1007/s12020-023-03315-9. Epub 2023 Feb 9. PMID: 36754931
- Ilyicheva EA, Shurygina IA, Dremina NN, et al. [The role of calcium sensitive and vitamin D receptors in the pathogenesis of sporadic multiple parathyroid gland disease]. Probl Endokrinol (Mosk). 2023 Jun 30;69(3):24-34. https://doi.org/10.14341/probl13207. PMID: 37448244
- Jayedi A, Daneshvar M, Jibril AT, et al. Serum 25(OH)D Concentration, Vitamin D Supplementation, and Risk of Cardiovascular Disease and Mortality in Patients with Type 2 Diabetes or Prediabetes: a Systematic Review and Dose-Response Meta-Analysis. Am J Clin Nutr. 2023 Jul 18:S0002-9165(23)66056-3. https://doi.org/10.1016/j.ajcnut.2023.07.012. Online ahead of print. PMID: 37467897
- Kaličanin D, Cvek M, Barić A, et al. Associations between vitamin D levels and dietary patterns in patients with Hashimoto's thyroiditis. Front Nutr. 2023 May 5;10:1188612. https://doi.org/10.3389/fnut.2023.1188612. eCollection 2023. PMID: 37215216
- Karras SN, Koufakis T, Dimakopoulos G, et al. Down regulation of the inverse relationship between parathyroid hormone and irisin in male vitamin D-sufficient HIV patients. J Endocrinol Invest. 2023 May 28. https://doi.org/10.1007/s40618-023-02112-5. Online ahead of print. PMID: 37245160
- Kells MR, Roske C, Watters A, et al. Vitamin D and Hypophosphatemia in Patients with Anorexia Nervosa and Avoidant/Restrictive Food Intake Disorder: A Case Control Study. Res Sq. 2023 Jul 17:rs.3.rs-3101384. https://doi.org/10.21203/rs.3.rs-3101384/v1. Preprint. PMID: 37503154
- Khaledi K, Hoseini R, Gharzi A. Effects of aerobic training and vitamin D supplementation on glycemic indices and adipose tissue gene expression in type 2 diabetic rats. Sci Rep. 2023 Jun 23;13(1):10218. https://doi.org/10.1038/s41598-023-37489-z. PMID: 37353689
- Krisnamurti DGB, Louisa M, Poerwaningsih EH, et al. Vitamin D supplementation alleviates insulin resistance in prediabetic rats by modifying IRS-1 and PPARγ/NF-κB expressions. Front Endocrinol (Lausanne). 2023 May 31;14:1089298. https://doi.org/10.3389/fendo.2023.1089298. eCollection 2023. PMID: 37324274
- Krysiak R, Kowalcze K, Szkróbka W, et al. Sexual Function and Depressive Symptoms in Young Women with Euthyroid Hashimoto's Thyroiditis Receiving Vitamin D, Selenomethionine and Myo-Inositol: A Pilot Study. Nutrients. 2023 Jun 20;15(12):2815. https://doi.org/10.3390/nu15122815. PMID: 37375719
- Krysiak R, Kowalcze K, Szkróbka W, et al. Vitamin D Status Determines the Impact of Metformin on Gonadotropin Levels in Postmenopausal Women. J Clin Med. 2023 May 27;12(11):3715. https://doi.org/10.3390/jcm12113715. PMID: 37297909
- Kwiendacz H, Nabrdalik K, Wijata AM, et al. Relationship of vitamin D deficiency with cardiovascular disease and glycemic control in patients with type 2 diabetes mellitus: the Silesia Diabetes-Heart Project. Pol Arch Intern Med. 2023 Jun 23;133(6):16445. https://doi.org/10.20452/pamw.16445. Epub 2023 Feb 27. PMID: 36856666
- Lau D. In prediabetes, oral vitamin D reduces progression to new-onset diabetes. Ann Intern Med. 2023 May;176(5):JC55. https://doi.org/10.7326/J23-0030. Epub 2023 May 2. PMID: 37126809
- Lebiedziński F, Lisowska KA. Impact of Vitamin D on Immunopathology of Hashimoto's Thyroiditis: From Theory to Practice. Nutrients. 2023 Jul 17;15(14):3174. https://doi.org/10.3390/nu15143174. PMID: 37513592
- Lei F, Ni J, Hu JL, et al. Different doses of vitamin D supplementation to nonsurgical treatment for vitamin-D-insufficient patients with diabetic periodontitis and the effect on gingival BMP-2 levels. Kaohsiung J Med Sci. 2023 Jul 3. https://doi.org/10.1002/kjm2.12726. Online ahead of print. PMID: 37395326
- Lei X, Zhou Q, Wang Y, et al. Serum and supplemental vitamin D levels and insulin resistance in T2DM populations: a meta-analysis and systematic review. Sci Rep. 2023 Jul 31;13(1):12343. https://doi.org/10.1038/s41598-023-39469-9. PMID: 37524765
- Li X, Kou S, Chen G, et al. The relationship between vitamin D deficiency and diabetic foot ulcer: A meta-analysis. Int Wound J. 2023 May 16. https://doi.org/10.1111/iwj.14177. Online ahead of print. PMID: 37194326
- Liu J, Liu J, Zhang J, et al. Vitamin D deficiency in early life regulates gut microbiome composition and leads to impaired glucose tolerance in adult and offspring rats. Food Funct. 2023 Jun 19;14(12):5768-5786. https://doi.org/10.1039/d3fo00503h. PMID: 37285306
- Manero-Azua Á, Pereda A, González Cabrera N, et al. Vitamin D deficiency in adulthood: Presentation of 2familial cases simulating pseudohypoparathyroidism.

Med Clin (Barc). 2023 Jul 25:S0025-7753(23)00369-X. https://doi.org/10.1016/j.medcli.2023.06.009. Online ahead of print. PMID: 37500374

- Md Isa Z, Amsah N, Ahmad N. The Impact of Vitamin D Deficiency and Insufficiency on the Outcome of Type 2 Diabetes Mellitus Patients: A Systematic Review. Nutrients. 2023 May 15;15(10):2310. https://doi.org/10.3390/nu15102310. PMID: 37242192
- Mohater S, Qahtan S, Alrefaie Z, et al. Vitamin D improves hepatic alterations in ACE1 and ACE2 expression in experimentally induced metabolic syndrome. Saudi Pharm J. 2023 Sep;31(9):101709. https://doi.org/10.1016/j.jsps.2023.101709. Epub 2023 Jul 26. PMID: 37559868
- Obert P, Nottin S, Philouze C, et al. Major impact of vitamin D3 deficiency and supplementation on left ventricular torsional mechanics during dobutamine stress in uncomplicated type 2 diabetes. Nutr Metab Cardiovasc Dis. 2023 Jun 24:S0939-4753(23)00250-8. https://doi.org/10.1016/j.numecd.2023.06.017. Online ahead of print. PMID: 37543521
- Oh J, Riek AE, Bauerle KT, et al. Embryonic vitamin D deficiency programs hematopoietic stem cells to induce type 2 diabetes. Nat Commun. 2023 Jun 13;14(1):3278. https://doi.org/10.1038/s41467-023-38849-z. PMID: 37311757
- Pang C, Yu H, Cai Y, et al. Vitamin D and diabetic peripheral neuropathy: A multi-centre nerve conduction study among Chinese patients with type 2 diabetes. Diabetes Metab Res Rev. 2023 Jun 20:e3679. https://doi.org/10.1002/dmrr.3679. Online ahead of print. PMID: 37337761
- Quesada-Gomez JM, Bouillon R. Calcifediol Cornerstone of the Vitamin D Endocrine System. Nutrients. 2023 May 12;15(10):2290. https://doi.org/10.3390/nu15102290. PMID: 37242173
- Rattanamusik N, Uitrakul S, Charoenpiriya A. Vitamin D Levels in Patients with Active and Remission Graves' Disease. Medicines (Basel). 2023 Jul 6;10(7):41. https://doi.org/10.3390/medicines10070041. PMID: 37505062
- Silveira EA, Costa Silveira L, de Souza Cardoso CK, et al. Vitamin D in women with class II/III obesity: Findings from the DieTBra trial. Clin Nutr ESPEN. 2023 Jun;55:83-89. https://doi.org/10.1016/j.clnesp.2023.02.027. Epub 2023 Mar 9. PMID: 37202088
- Smotrys MA, Liu JZ, Street S, et al. Energetic homeostasis achieved through biophoton energy and accompanying medication treatment resulted in sustained levels of Thyroiditis-Hashimoto's, iron, vitamin D & vitamin B12. Metabol Open. 2023 May 29;18:100248. https://doi.org/10.1016/j.metop.2023.100248. eCollection 2023 Jun. PMID: 37303826
- Stewart BZ, Mamonova T, Sneddon WB, et al. Scribble scrambles parathyroid hormone receptor interactions to regulate phosphate and vitamin D homeostasis. Proc Natl Acad Sci U S A. 2023 Jun 6;120(23):e2220851120. https://doi.org/10.1073/pnas.2220851120. Epub 2023 May 30. PMID: 37252981
- Sun L, Lu J, Yao D, et al. Effect of DHCR7 for the co-occurrence of hypercholesterolemia and vitamin D deficiency in type 2 diabetes: Perspective of health prevention. Prev Med. 2023 Aug;173:107576. https://doi.org/10.1016/j.ypmed.2023.107576. Epub 2023 Jun 15. PMID: 37329988
- Sun X, Yan T, Li Z, et al. Effects of Endurance Exercise and Vitamin D Supplementation on Insulin Resistance and Plasma Lipidome in Middle-Aged Adults with Type 2 Diabetes. Nutrients. 2023 Jul 3;15(13):3027. https://doi.org/10.3390/nu15133027. PMID: 37447353
- Taloyan M, Steiner KH, Östenson CG, et al. Fasting plasma glucose and serum 25-hydroxy vitamin D levels in individuals with Middle Eastern and Swedish descent. J Diabetes Metab Disord. 2023 May 22:1-7. https://doi.org/10.1007/s40200-023-01226-0. Online ahead of print. PMID: 37363201
- Verdoia M, De Luca G. Is there an actual link between vitamin D deficiency, cardiovascular disease, and glycemic control in patients with type 2 diabetes mellitus? Pol Arch Intern Med. 2023 Jun 23;133(6):16516. https://doi.org/10.20452/pamw.16516. Epub 2023 Jun 23. PMID: 37351588
- Vetrani C, Barrea L, Verde L, et al. Vitamin D and chronotype: is there any relationship in individuals with obesity? J Endocrinol Invest. 2023 May;46(5):1001-1008. https://doi.org/10.1007/s40618-022-01973-6. Epub 2022 Dec 1. PMID: 36454438
- Vijay GS, Ghonge S, Vajjala SM, et al. Prevalence of Vitamin D Deficiency in Type 2 Diabetes Mellitus Patients: A Cross-Sectional Study. Cureus. 2023 May 12;15(5):e38952. https://doi.org/10.7759/cureus.38952. eCollection 2023 May. PMID: 37313077
- Vrysis C, Beneki E, Zintzaras E, et al. Assessment of the reporting quality of randomised controlled trials for vitamin D supplementation in autoimmune thyroid disorders based on the CONSORT statement. Endocrine. 2023 May;80(2):346-354. https://doi.org/10.1007/s12020-022-03270-x. Epub 2022 Dec 3. PMID: 36462148
- Wang C, Li H, Huo L, et al. Serum 25-Hydroxyvitamin D Levels in Type 2 Diabetes Patients in North China: Seasonality and the Association between Vitamin D Status and Glycosylated Hemoglobin Levels. Int J Clin Pract. 2023 May 5;2023:4151224. https://doi.org/10.1155/2023/4151224. eCollection 2023. PMID: 37188155
- Wee CL, Azemi AK, Mokhtar SS, et al. Vitamin D deficiency enhances vascular oxidative stress, inflammation, and angiotensin II levels in the microcirculation of diabetic patients. Microvasc Res. 2023 Jun 28;150:104574. https://doi.org/10.1016/j.mvr.2023.104574. Online ahead of print. PMID: 37390963
- Yoon SH, Meyer MB, Arevalo C, et al. A parathyroid hormone/salt-inducible kinase signaling axis controls renal vitamin D activation and organismal calcium homeostasis. J Clin Invest. 2023 May 1;133(9):e163627. https://doi.org/10.1172/JCI163627. PMID: 36862513
- Zhao ZM, Zhang CD. A commentary on 'Perioperative versus postoperative calcium and vitamin D supplementation to prevent symptomatic hypocalcemia after total thyroidectomy: a randomized placebo controlled trial'. Int J Surg. 2023 Jul 1;109(7):2133-2134. https://doi.org/10.1097/JS9.0000000000000351. PMID: 37288589

EPIDEMIOLOGIA

- Abdelsalam M, Nagy E, Abdalbary M, et al. Prevalence and Associated Factors of Vitamin D Deficiency in High Altitude Region in Saudi Arabia: Three-Year Retrospective Study. Int J Gen Med. 2023 Jul 12;16:2961-2970. https://doi.

org/10.2147/IJGM.S418811. eCollection 2023. PMID: 37485454

- Caso G, Grønhøj A, Vecchio R, et al. Senior citizens' vitamin D supplements intake: evidence from Denmark. J Sci Food Agric. 2023 May 6. https://doi.org/10.1002/jsfa.12693. Online ahead of print. PMID: 37148153
- Chailurkit LO, Ongphiphadhanakul B, Aekplakorn W. Update on vitamin D status in sunshine-abundant Thailand, 2019-2020. Nutrition. 2023 Jul 11;116:112161. https://doi.org/10.1016/j.nut.2023.112161. Online ahead of print. PMID: 37544190
- Díaz de León González E, Gutiérrez Hermosillo H, Morales Torres JLA. Serum vitamin D levels and mortality in Mexicans: results from the Mexican Health and Aging Study. Nutr Hosp. 2023 Jun 21. https://doi.org/10.20960/nh.04580. Online ahead of print. PMID: 37409711
- Feehan O, Magee PJ, Pourshahidi LK, et al. Vitamin D deficiency in nursing home residents: a systematic review. Nutr Rev. 2023 Jun 9;81(7):804-822. https://doi.org/10.1093/nutrit/nuac091. PMID: 36367832
- Hendi NN, Chakhtoura M, Al-Sarraj Y, et al. The Genetic Architecture of Vitamin D Deficiency among an Elderly Lebanese Middle Eastern Population: An Exome-Wide Association Study. Nutrients. 2023 Jul 20;15(14):3216. https://doi.org/10.3390/nu15143216. PMID: 37513634
- Henriques M, Rodrigues D, Viegas S, et al. Vitamin D status in active duty Navy military personnel: a systematic review. Occup Environ Med. 2023 Jun;80(6):353-360. https://doi.org/10.1136/oemed-2022-108710. Epub 2023 Apr 3. PMID: 37012046
- Kim KN, Lee JS, Shim JS, et al. Estimated dietary vitamin D intake and major vitamin D food sources of Koreans: based on the Korea National Health and Nutrition Examination Survey 2016-2019. Nutr Res Pract. 2023 Jun;17(3):451-463. https://doi.org/10.4162/nrp.2023.17.3.451. Epub 2022 Sep 14. PMID: 37266120
- Kowalówka M, Kosewski G, Lipiński D, et al. A Comprehensive Look at the -13910 C>T LCT Gene Polymorphism as a Molecular Marker for Vitamin D and Calcium Levels in Young Adults in Central and Eastern Europe: A Preliminary Study. Int J Mol Sci. 2023 Jun 15;24(12):10191. https://doi.org/10.3390/ijms241210191. PMID: 37373338
- Lee JK, Chee WS, Foo SH, et al. Vitamin D status and clinical implications in the adult population of Malaysia: a position paper by the Malaysian Vitamin D Special Interest Group. Osteoporos Int. 2023 Jul 11. https://doi.org/10.1007/s00198-023-06841-4. Online ahead of print. PMID: 37430004
- Lee JK, Chee WSS, Foo SH, et al. Correction: Vitamin D status and clinical implications in the adult population of Malaysia: a position paper by the Malaysian Vitamin D Special Interest Group. Osteoporos Int. 2023 Jul 28. https://doi.org/10.1007/s00198-023-06865-w. Online ahead of print. PMID: 37505306
- Liu X, Brock KE, Brennan-Speranza TC, et al. Healthy lifestyles are associated with better vitamin D status in community-dwelling older men: The Health In Men Study (HIMS). Clin Endocrinol (Oxf). 2023 Aug;99(2):165-173. https://doi.org/10.1111/cen.14926. Epub 2023 May 10. PMID: 37165475
- Lovell P, Bullen K. Vitamin D levels in hospice in-patients. BMJ Support Palliat Care. 2023 Jun;13(2):244-246. https://doi.org/10.1136/bmjspcare-2021-003113. Epub 2021 Nov 15. PMID: 34782345
- Nascimento LM, Lavôr LCC, Sousa PVL, et al. Consumption of ultra-processed products is associated with vitamin d deficiency in brazilian adults and elderly. Br J Nutr. 2023 Jul 19:1-23. https://doi.org/10.1017/S000711452300154X. Online ahead of print. PMID: 37466032
- Retamoso VR, Feijóo LB, Vasquez Rubio DA, et al. Black skin color but not VDR gene represent a risk factor for low serum levels of vitamin D in self-declared black individuals. Clin Nutr ESPEN. 2023 Jun;55:230-237. https://doi.org/10.1016/j.clnesp.2023.03.016. Epub 2023 Mar 28. PMID: 37202051
- Scully H, McCarroll K, Healy M, et al. Vitamin D intake and status in Ireland: a narrative review. Proc Nutr Soc. 2023 May;82(2):157-171. https://doi.org/10.1017/S0029665123002185. Epub 2023 Feb 14. PMID: 37264891
- Sridonpai P, Suthipibul P, Boonyingsathit K, et al. Vitamin D Content in Commonly Consumed Mushrooms in Thailand and Its True Retention after Household Cooking. Foods. 2023 May 25;12(11):2141. https://doi.org/10.3390/foods12112141. PMID: 37297386
- Tripathy S, Negi S, Kumar D, et al. Prevalence of Vitamin-D deficiency and insufficiency among prisoners across the globe: A systematic review and meta-analysis. J Forensic Leg Med. 2023 Jul;97:102549. https://doi.org/10.1016/j.jflm.2023.102549. Epub 2023 Jun 16. PMID: 37348178
- Vergara-Maldonado C, Urdaneta-Machado JR. The Effects of Latitude and Temperate Weather on Vitamin D Deficiency and Women's Reproductive Health: A Scoping Review. J Midwifery Womens Health. 2023 May-Jun;68(3):340-352. https://doi.org/10.1111/jmwh.13516. Epub 2023 May 31. PMID: 37255079 Review.
- Wang TY, Wang HW, Jiang MY. Prevalence of vitamin D deficiency and associated risk of all-cause and cause-specific mortality among middle-aged and older adults in the United States. Front Nutr. 2023 May 18;10:1163737. https://doi.org/10.3389/fnut.2023.1163737. eCollection 2023. PMID: 37275650

GASTROENTEROLOGIA

- Aggeletopoulou I, Marangos M, Assimakopoulos SF, et al. Vitamin D and Microbiome: Molecular Interaction in Inflammatory Bowel Disease Pathogenesis. Am J Pathol. 2023 Jun;193(6):656-668. https://doi.org/10.1016/j.ajpath.2023.02.004. Epub 2023 Mar 1. PMID: 36868465
- Aggeletopoulou I, Tsounis EP, Mouzaki A, et al. Exploring the Role of Vitamin D and the Vitamin D Receptor in the Composition of the Gut Microbiota. Front Biosci (Landmark Ed). 2023 Jun 14;28(6):116. https://doi.org/10.31083/j.fbl2806116. PMID: 37395032
- Al-Maweri SA, Al-Qadhi G, Halboub E, et al. Vitamin D deficiency and risk of recurrent aphthous stomatitis: updated meta-analysis with trial sequential analysis. Front Nutr. 2023 Jun 22;10:1132191. https://doi.org/10.3389/fnut.2023.1132191. eCollection 2023. PMID: 37426194
- Álvarez-Delgado C, Ruedas-Torres I, Sánchez-Carvajal JM, et al. Impact of supplementation with dihydroxylated vitamin D3

on performance parameters and gut health in weaned Iberian piglets under indoor/outdoor conditions. Porcine Health Manag. 2023 Jun 15;9(1):15. https://doi.org/10.1186/s40813-023-00307-z. PMID: 37316951

- Bartolini D, Zatini L, Migni A, et al. Transcriptomics of natural and synthetic vitamin D in human hepatocyte lipotoxicity. J Nutr Biochem. 2023 Jul;117:109319. https://doi.org/10.1016/j.jnutbio.2023.109319. Epub 2023 Mar 23. PMID: 36963728

- Barut D, Akisu M, Koroglu OA, et al. The role of vitamin D receptor gene polymorphism in the development of necrotizing enterocolitis. Pediatr Res. 2023 Jul;94(1):275-279. https://doi.org/10.1038/s41390-022-02426-9. Epub 2023 Jan 3. PMID: 36596941

- Boccuzzi L, Infante M, Ricordi C. The potential therapeutic role of vitamin D in inflammatory bowel disease. Eur Rev Med Pharmacol Sci. 2023 May;27(10):4678-4687. https://doi.org/10.26355/eurrev_202305_32479. PMID: 37259751

- Bredenoord AJ. Eosinophilic esophagitis and the promise of vitamin D. Gut. 2023 May;72(5):812-813. https://doi.org/10.1136/gutjnl-2022-328283. Epub 2022 Sep 2. PMID: 37015752

- Brusilovsky M, Rochman M, Shoda T, et al. Vitamin D receptor and STAT6 interactome governs oesophageal epithelial barrier responses to IL-13 signalling. Gut. 2023 May;72(5):834-845. https://doi.org/10.1136/gutjnl-2022-327276. Epub 2022 Aug 2. PMID: 35918104

- Chanchlani N, Lin S, Smith R, et al. Pretreatment Vitamin D Concentrations Do Not Predict Therapeutic Outcome to Anti-TNF Therapies in Biologic-Naïve Patients With Active Luminal Crohn's Disease. Crohns Colitis 360. 2023 May 15;5(3):otad026. https://doi.org/10.1093/crocol/otad026. eCollection 2023 Jul. PMID: 37265586

- Chiang CH, Chang YJ, He SR, et al. Association of 25(OH)-Vitamin D and metabolic factors with colorectal polyps. PLoS One. 2023 Jun 8;18(6):e0286654. https://doi.org/10.1371/journal.pone.0286654. eCollection 2023. PMID: 37289677

- Ciardullo S, Muraca E, Cannistraci R, et al. Low 25 (OH) vitamin D levels are associated with increased prevalence of nonalcoholic fatty liver disease and significant liver fibrosis. Diabetes Metab Res Rev. 2023 Jul;39(5):e3628. https://doi.org/10.1002/dmrr.3628. Epub 2023 Mar 9. PMID: 36815587

- Kohli A, Chawla A, Arora S, et al. Vitamin D Toxicity Masquerading as Acute Pancreatitis. Cureus. 2023 Jun 9;15(6):e40189. https://doi.org/10.7759/cureus.40189. eCollection 2023 Jun. PMID: 37304381

- Lee D, Koo Y, Chae Y, et al. Serum 25-hydroxyvitamin D, vitamin D receptor, and vitamin D binding protein concentrations in dogs with acute pancreatitis compared to healthy control dogs. J Vet Intern Med. 2023 Jul 26. https://doi.org/10.1111/jvim.16809. Online ahead of print. PMID: 37496238

- Lin HR, Xu F, Chen D, et al. The gut microbiota-bile acid axis mediates the beneficial associations between plasma vitamin D and metabolic syndrome in Chinese adults: A prospective study. Clin Nutr. 2023 Jun;42(6):887-898. https://doi.org/10.1016/j.clnu.2023.03.022. Epub 2023 Apr 13. PMID:

- Lin X, Wu X, Zhang Y, et al. Effect of Vitamin D Supplementation on Clinical Course and T Helper 17/ T-Regulatory Balance in Peripheral Blood of Patients with Crohn's Disease. Turk J Gastroenterol. 2023 May;34(5):463-471. https://doi.org/10.5152/tjg.2023.22496. PMID: 37158532

- Luo M, Xu Y, Li J, et al. Vitamin D protects intestines from liver cirrhosis-induced inflammation and oxidative stress by inhibiting the TLR4/MyD88/NF-κB signaling pathway. Open Med (Wars). 2023 May 29;18(1):20230714. https://doi.org/10.1515/med-2023-0714. eCollection 2023. PMID: 37273916

- Mariano da Rocha CR, Guaragna-Filho G, Kieling CO, et al. Daily Vitamin D Supplementation Improves Vitamin D Deficiency in Patients With Chronic Liver Disease. J Pediatr Gastroenterol Nutr. 2023 Jun 1;76(6):723-730. https://doi.org/10.1097/MPG.0000000000003769. Epub 2023 Mar 13. PMID: 36917843

- Matthews SW, Plantinga A, Burr R, et al. Exploring the Role of Vitamin D and the Gut Microbiome: A Cross-Sectional Study of Individuals with Irritable Bowel Syndrome and Healthy Controls. Biol Res Nurs. 2023 Jul;25(3):436-443. https://doi.org/10.1177/10998004221150395. Epub 2023 Jan 9. PMID: 36624571

- Munem F, Thianhlun PCK, Anderson PH, et al. Vitamin D is a potential treatment for the management of gastrointestinal mucositis. Curr Opin Support Palliat Care. 2023 Sep 1;17(3):247-252. https://doi.org/10.1097/SPC.0000000000000651. Epub 2023 Jun 6. PMID: 37276064

- Saeki C, Kanai T, Ueda K, et al. Prognostic significance of sarcopenia and severe vitamin D deficiency in patients with cirrhosis. JGH Open. 2023 Apr 14;7(5):351-357. https://doi.org/10.1002/jgh3.12900. eCollection 2023 May. PMID: 37265932

- Tourkochristou E, Mouzaki A, Triantos C. Gene Polymorphisms and Biological Effects of Vitamin D Receptor on Nonalcoholic Fatty Liver Disease Development and Progression. Int J Mol Sci. 2023 May 5;24(9):8288. https://doi.org/10.3390/ijms24098288. PMID: 37175993

- Tourkochristou E, Tsounis EP, Tzoupis H, et al. The Influence of Single Nucleotide Polymorphisms on Vitamin D Receptor Protein Levels and Function in Chronic Liver Disease. Int J Mol Sci. 2023 Jul 13;24(14):11404. https://doi.org/10.3390/ijms241411404. PMID: 37511164

- Xiao HY, Rao SY, Zhang DL, et al. [Explore the influence of vitamin D supplementation on clinical efficacy and drug retention rate of vedolizumab in patients with ulcerative colitis]. Zhonghua Yi Xue Za Zhi. 2023 Jun 20;103(23):1759-1766. https://doi.org/10.3760/cma.j.cn112137-20221216-02663. PMID: 37305935

- Xing K, Wu Y, Gao F, et al. Design, synthesis and anti-hepatic fibrosis activity of novel diphenyl vitamin D receptor agonists. Eur J Med Chem. 2023 Oct 5;258:115596. https://doi.org/10.1016/j.ejmech.2023.115596. Epub 2023 Jun 26. PMID: 37406383

- Yan C, Hu C, Chen X, et al. Vitamin D improves irritable bowel syndrome symptoms: A meta-analysis. Heliyon. 2023 May 25;9(6):e16437. https://doi.org/10.1016/j.heliyon.2023.e16437. eCollection 2023 Jun. PMID: 37260904

- Yu XL, Li CP, He LP. Vitamin D may alleviate irritable bowel syndrome by modulating serotonin synthesis: a hypothesis based on recent literature. Front Physiol. 2023 Jul 27;14:1152958. https://doi.org/10.3389/fphys.2023.1152958. eCollection 2023. PMID: 37576336

- Zhang Z, Moon R, Thorne JL, et al. NAFLD and vitamin D: Evidence for intersection of microRNA-regulated pathways. Nutr Res Rev. 2023 Jun;36(1):120-139. https://doi.org/10.1017/S095442242100038X. Epub 2021 Dec 9. PMID: 35109946

- Zheng Y, Li JH, Liao SY, et al. Joint Detection of Serum Vitamin D, Body Mass Index, and Tumor Necrosis Factor Alpha for the Diagnosis of Crohn's Disease. Curr Med Sci. 2023 Jun;43(3):496-504. https://doi.org/10.1007/s11596-023-2741-6. Epub 2023 May 30. PMID: 37249734

GINECOLOGIA OSTETRICIA

- [No authors listed] Expression of concern: "Calcium plus vitamin D supplementation influences biomarkers of inflammation and oxidative stress in overweight and vitamin D-deficient women with polycystic ovary syndrome: A randomized double-blind placebo-controlled clinical trial". Clin Endocrinol (Oxf). 2023 May;98(5):746. https://doi.org/10.1111/cen.14892. Epub 2023 Feb 27. PMID: 36852466

- [No authors listed] The effects of vitamin D plus calcium supplementation on metabolic profiles, biomarkers of inflammation, oxidative stress and pregnancy outcomes in pregnant women at risk for preeclampsia. J Hum Nutr Diet. 2023 Jun;36(3):1121. https://doi.org/10.1111/jhn.13156. Epub 2023 Feb 27. PMID: 36852456

- Alam F, Shahid M, Riffat S, et al. SIRT1 and antioxidants in infertile females: Exploration of the role of vitamin D. PLoS One. 2023 Jul 10;18(7):e0287727. https://doi.org/10.1371/journal.pone.0287727. eCollection 2023. PMID: 37428803

- Albahlol IA, Neamatallah M, Serria MS, et al. Vitamin D receptor gene polymorphism and polycystic ovary syndrome susceptibility. BMC Med Genomics. 2023 May 18;16(1):108. https://doi.org/10.1186/s12920-023-01541-8. PMID: 37202765

- Amberntsson A, Bärebring L, Winkvist A, et al. Vitamin D intake and determinants of vitamin D status during pregnancy in The Norwegian Mother, Father and Child Cohort Study. Front Nutr. 2023 Jun 23;10:1111004. https://doi.org/10.3389/fnut.2023.1111004. eCollection 2023. PMID: 37426186

- Amiri M, Rostami M, Sheidaei A, et al. Mode of delivery and maternal vitamin D deficiency: an optimized intelligent Bayesian network algorithm analysis of a stratified randomized controlled field trial. Sci Rep. 2023 May 29;13(1):8682. https://doi.org/10.1038/s41598-023-35838-6. PMID: 37248326

- Ashraf M, Khan HN, Ibrahim R, et al. Genetic association of vitamin D receptor gene with female infertility. Nucleosides Nucleotides Nucleic Acids. 2023 Jul 26:1-18. https://doi.org/10.1080/15257770.2023.2236167. Online ahead of print. PMID: 37496429

- Aydogmus S, Aydogmus H, Gul S, et al. Is vitamin D replacement effective in the treatment of postpartum urinary incontinence? Int Urogynecol J. 2023 May;34(5):1103-1108. https://doi.org/10.1007/s00192-022-05446-5. Epub 2023 Jan 16. PMID: 36645442

- Batur EB, Batur AF. Letter to the editor: Is vitamin D replacement effective in the treatment of postpartum urinary incontinence? Int Urogynecol J. 2023 May;34(5):1109. https://doi.org/10.1007/s00192-023-05493-6. Epub 2023 Feb 27. PMID: 36847785

- Chen YC, Chiang YF, Lin YJ, et al. Effect of Vitamin D Supplementation on Primary Dysmenorrhea: A Systematic Review and Meta-Analysis of Randomized Clinical Trials. Nutrients. 2023 Jun 21;15(13):2830. https://doi.org/10.3390/nu15132830. PMID: 37447156

- Cheng M, Song Z, Guo Y, et al. 1α,25-Dihydroxyvitamin D3 Improves Follicular Development and Steroid Hormone Biosynthesis by Regulating Vitamin D Receptor in the Layers Model. Curr Issues Mol Biol. 2023 May 4;45(5):4017-4034. https://doi.org/10.3390/cimb45050256. PMID: 37232725

- Dahma G, Reddy G, Craina M, et al. The Effects of Vitamin D Supplementation before 20 Weeks of Gestation on Preeclampsia: A Systematic Review. J Pers Med. 2023 Jun 14;13(6):996. https://doi.org/10.3390/jpm13060996. PMID: 37373985

- Davis S, Lyles E, Shary JR, et al. Post Hoc Analysis of National Institute of Child Health and Human Development Vitamin-D Pregnancy Cohort and The Role of Functional Vitamin-D Deficiency in Pregnancy. Am J Perinatol. 2023 Jun 28. https://doi.org/10.1055/a-2097-2098. Online ahead of print. PMID: 37216969

- Donayeva A, Amanzholkyzy A, Abdelazim IA, et al. The relation between vitamin D and the adolescents' mid-luteal estradiol and progesterone. Eur Rev Med Pharmacol Sci. 2023 Jul;27(14):6792-6799. https://doi.org/10.26355/eurrev_202307_33150. PMID: 37522690

- Durá-Travé T, Gallinas-Victoriano F. Pregnancy, Breastfeeding, and Vitamin D. Int J Mol Sci. 2023 Jul 25;24(15):11881. https://doi.org/10.3390/ijms241511881. PMID: 37569256

- Gaml-Sørensen A, Brix N, Hærvig KK, et al. Maternal vitamin D levels and male reproductive health: a population-based follow-up study. Eur J Epidemiol. 2023 May;38(5):469-484. https://doi.org/10.1007/s10654-023-00987-5. Epub 2023 Mar 23. PMID: 36952117

- Han Y, Cao Q, Qiao X, et al. Effect of vitamin D supplementation on hormones and menstrual cycle regularization in polycystic ovary syndrome women: A systemic review and meta-analysis. J Obstet Gynaecol Res. 2023 Jun 26. https://doi.org/10.1111/jog.15727. Online ahead of print. PMID: 37364886

- Kazemi F, Babri S, Keyhanmehr P, et al. Maternal vitamin D supplementation and treadmill exercise attenuated vitamin D deficiency-induced anxiety-and depressive-like behaviors in adult male offspring rats. Nutr Neurosci. 2023 Jun;26(6):470-482. https://doi.org/10.1080/1028415X.2022.2059203. Epub 2022 Apr 26. PMID: 35470763

- Kim MJ, Kim HM, Cha HH, et al. Analysis of single nucleotide polymorphisms associated with the vitamin D pathway in the placentas of women with gestational diabetes mellitus: a laboratory study. J Yeungnam Med Sci. 2023 May 8. https://doi.org/10.12701/jyms.2023.00150. Online ahead of print. PMID: 37157780

- Kirlangic MM, Sade OS, Eraslan Sahin M. Effect of third trimester maternal vitamin D levels on placental weight to birth weight ratio in uncomplicated pregnancies. J Perinat Med.

2022 Dec 13;51(5):646-651. https://doi.org/10.1515/jpm-2022-0432. Print 2023 Jun 27. PMID: 36508611

- Lejman-Larysz K, Golara A, Baranowska M, et al. Influence of Vitamin D on the Incidence of Metabolic Syndrome and Hormonal Balance in Patients with Polycystic Ovary Syndrome. Nutrients. 2023 Jun 29;15(13):2952. https://doi.org/10.3390/nu15132952. PMID: 37447279

- Li CP, Su HQ, He LP. Vitamin D may alleviate pre-eclampsia by modulating the ferroptosis signalling pathway: A hypothesis based on recent literature. J Cell Mol Med. 2023 Jul;27(14):1923-1927. https://doi.org/10.1111/jcmm.17754. Epub 2023 Apr 26. PMID: 37099247

- Liu CC, Huang JP. Potential benefits of vitamin D supplementation on pregnancy. J Formos Med Assoc. 2023 Jul;122(7):557-563. https://doi.org/10.1016/j.jfma.2023.02.004. Epub 2023 Mar 14. PMID: 36925361

- Liu Y, He Z, Huang N, et al. Impact of thyroid autoimmunity and vitamin D on in vitro fertilization/intracytoplasmic sperm injection outcomes among women with normal thyroid function. Front Endocrinol (Lausanne). 2023 May 8;14:1098975. https://doi.org/10.3389/fendo.2023.1098975. eCollection 2023. PMID: 37223025

- Lorenzon F, Gregorio T, Niebisch F, et al. Gestational administration of vitamin D improves maternal care and prevents anxiety-like behavior in male and female Wistar rats prenatally exposed to dexamethasone. Life Sci. 2023 Aug 1;326:121799. https://doi.org/10.1016/j.lfs.2023.121799. Epub 2023 May 26. PMID: 37245838

- Lumme J, Morin-Papunen L, Pesonen P, et al. Vitamin D Status in Women with a History of Infertility and Decreased Fecundability: A Population-Based Study. Nutrients. 2023 May 29;15(11):2522. https://doi.org/10.3390/nu15112522. PMID: 37299485

- Luo LM, Wu N, Zhang J, et al. Maternal vitamin D levels correlate with fetal weight and bone metabolism during pregnancy: a materno-neonatal analysis of bone metabolism parameters. J Perinat Med. 2022 Nov 28;51(4):538-545. https://doi.org/10.1515/jpm-2022-0068. Print 2023 May 25. PMID: 36435526

- Ma S, Yin W, Wang P, et al. Effect of vitamin D supplementation on glucose control in mid-late gestation: A randomized controlled trial. Clin Nutr. 2023 Jun;42(6):929-936. https://doi.org/10.1016/j.clnu.2023.04.011. Epub 2023 Apr 14. PMID: 37087832

- Ma Y, Zhang Y, He Q, et al. Vitamin D regulates microflora and ameliorates LPS-induced placental inflammation in rats. Physiol Genomics. 2023 Jul 1;55(7):286-296. https://doi.org/10.1152/physiolgenomics.00004.2023. Epub 2023 Apr 24. PMID: 37092745

- Maaherra Armstrong P, Augustin H, et al. Prevalence of Vitamin D Insufficiency and Its Determinants among Women Undergoing In Vitro Fertilization Treatment for Infertility in Sweden. Nutrients. 2023 Jun 20;15(12):2820. https://doi.org/10.3390/nu15122820. PMID: 37375724

- Majid MA, Hassan WN, Ridha AF. Prevalence of 25-Hydroxyvitamin D (Vitamin D) Deficiency in a Group of Infertile Women from Baghdad City. Biochem Res Int. 2023 Jun 14;2023:6597730. https://doi.org/10.1155/2023/6597730. eCollection 2023. PMID: 37350868

- Mead MJ, McWhorter CA, Rodgers MD, et al. Does maternal vitamin D status influence placental weight or vascular and inflammatory pathology? Secondary analysis from the Kellogg Pregnancy Study. J Steroid Biochem Mol Biol. 2023 Jul 4;233:106358. https://doi.org/10.1016/j.jsbmb.2023.106358. Online ahead of print. PMID: 37414103

- Mei Z, Hu H, Zou Y, et al. The role of vitamin D in menopausal women's health. Front Physiol. 2023 Jun 12;14:1211896. https://doi.org/10.3389/fphys.2023.1211896. eCollection 2023. PMID: 37378077

- Mohan A, Haider R, Fakhor H, et al. Vitamin D and polycystic ovary syndrome (PCOS): a review. Ann Med Surg (Lond). 2023 Jun 5;85(7):3506-3511. https://doi.org/10.1097/MS9.0000000000000879. eCollection 2023 Jul. PMID: 37427232

- Mumena WA, Hanbazaza MA. Predictors of Maternal Knowledge, Attitude, and Practices Toward Vitamin D Supplements in Saudi Infants and Toddlers. Matern Child Health J. 2023 May;27(5):805-814. https://doi.org/10.1007/s10995-023-03612-9. Epub 2023 Feb 18. PMID: 36807236

- Nakajima H, Sakamoto Y, Honda Y, et al. Estimation of the vitamin D (VD) status of pregnant Japanese women based on food intake and VD synthesis by solar UV-B radiation using a questionnaire and UV-B observations. J Steroid Biochem Mol Biol. 2023 May;229:106272. https://doi.org/10.1016/j.jsbmb.2023.106272. Epub 2023 Feb 10. PMID: 36775044

- Nandakumar M, Sathyapalan T, Butler AE, et al. Oxidative Stress Markers and Heat Shock Proteins in Non-Obese Women with Polycystic Ovary Syndrome Are Not Elevated and Show No Correlation with Vitamin D. Biomedicines. 2023 Jul 20;11(7):2044. https://doi.org/10.3390/biomedicines11072044. PMID: 37509682

- Nema J, Wadhwani N, Randhir K, et al. Association of maternal vitamin D status with the risk of preeclampsia. Food Funct. 2023 May 22;14(10):4859-4865. https://doi.org/10.1039/d3fo00007a. PMID: 37129568

- Nowak A, Wojtowicz M, Baranski K, et al. The correlation of vitamin D level with body mass index in women with PCOS. Ginekol Pol. 2023 May 10. https://doi.org/10.5603/GP.a2023.0037. Online ahead of print. PMID: 37162141

- Octavius GS, Daleni VA, Angeline G, et al. A systematic review and meta-analysis of prevalence of vitamin D deficiency among Indonesian pregnant women: a public health emergency. AJOG Glob Rep. 2023 Mar 12;3(2):100189. https://doi.org/10.1016/j.xagr.2023.100189. eCollection 2023 May. PMID: 37234813

- Purdue-Smithe AC, Langton CR, Manson JE. Vitamin D status during pregnancy: a role in intergenerational reproductive health? Eur J Epidemiol. 2023 May;38(5):465-467. https://doi.org/10.1007/s10654-023-01011-6. Epub 2023 Apr 25. PMID: 37148409

- Rios-Leyvraz M, Yao Q. Calcium, zinc, and vitamin D in breast milk: a systematic review and meta-analysis. Int Breastfeed J. 2023 Jun 1;18(1):27. https://doi.org/10.1186/s13006-023-00564-2. PMID: 37264448

- Roussev BH, Salim AS, Nenkova GT, et al. Effect of vitamin D metabolites and gene

expression of vitamin D receptor, and 1-alpha-hydroxylase related to the sperm quality. Reprod Domest Anim. 2023 Jun 30. https://doi.org/10.1111/rda.14421. Online ahead of print. PMID: 37386932

- Saidi L, Hammou H, Sicard F, et al. Maternal vitamin D deficiency and brain functions: a never-ending story. Food Funct. 2023 Jul 17;14(14):6290-6301. https://doi.org/10.1039/d3fo00166k. PMID: 37350315 Review.
- Sarebani Z, Chegini V, Chen H, et al. Effect of vitamin D vaginal suppository on sexual functioning among postmenopausal women: A three-arm randomized controlled clinical trial. Obstet Gynecol Sci. 2023 May;66(3):208-220. https://doi.org/10.5468/ogs.22038. Epub 2023 Feb 24. PMID: 36825329
- Shadid IL, Brustad N, Lu M, et al. The Impact of Baseline 25-Hydroxyvitamin D Level and Gestational Age on Prenatal Vitamin D Supplementation to Prevent Offspring Asthma or Recurrent Wheezing. Am J Clin Nutr. 2023 Jun;117(6):1342-1352. https://doi.org/10.1016/j.ajcnut.2023.04.019. Epub 2023 Apr 17. PMID: 37075847
- Sharma A, Yu Y, Lu J, et al. The Impact of Maternal Probiotics on Intestinal Vitamin D Receptor Expression in Early Life. Biomolecules. 2023 May 16;13(5):847. https://doi.org/10.3390/biom13050847. PMID: 37238716
- Simpson S, Pal L. Vitamin D and infertility. Curr Opin Obstet Gynecol. 2023 Aug 1;35(4):300-305. https://doi.org/10.1097/GCO.0000000000000887. Epub 2023 May 19. PMID: 37266579
- Sobczak M, Pawliczak R. Relationship between vitamin D and asthma from gestational to adulthood period: a meta-analysis of randomized clinical trials. BMC Pulm Med. 2023 Jun 17;23(1):212. https://doi.org/10.1186/s12890-023-02514-4. PMID: 37330474
- Tahsin T, Khanam R, Chowdhury NH, et al. Vitamin D deficiency in pregnancy and the risk of preterm birth: a nested case-control study. BMC Pregnancy Childbirth. 2023 May 6;23(1):322. https://doi.org/10.1186/s12884-023-05636-z. PMID: 37149566
- Tuo LJ, Song XY, Zhu YY, et al. Gestational folic acid supplement prevents vitamin D deficiency-induced depression-like behavior by reversing cortical DNA hypomethylation in adult offspring. J Steroid Biochem Mol Biol. 2023 Jul;231:106313. https://doi.org/10.1016/j.jsbmb.2023.106313. Epub 2023 Apr 17. PMID: 37075986
- Wang R, Zhu X, Zhang X, et al. Association of vitamin D and polymorphisms of its receptor with antiviral therapy in pregnant women with hepatitis B. World J Gastroenterol. 2023 May 21;29(19):3003-3012. https://doi.org/10.3748/wjg.v29.i19.3003. PMID: 37274802
- Xu QH, Muyayalo KP, Zhang YJ, et al. Altered vitamin D metabolism is involved in the dysregulation of γδT cell function and their crosstalk with trophoblasts in recurrent pregnancy loss. Am J Reprod Immunol. 2023 Jun;89(6):e13581. https://doi.org/10.1111/aji.13581. Epub 2022 Jul 1. PMID: 35704547
- Yuan C, Xiang L, Jian Z, et al. Vitamin D Levels and Risk of Male Factor Infertility: A Mendelian Randomization Study. World J Mens Health. 2023 Jul;41(3):640-648. https://doi.org/10.5534/wjmh.220109. Epub 2023 Jan 1. PMID: 36593707

IMMUNOLOGIA

- Abbas AM, Elkhatib WF, Aboulwafa MM, et al. Bioconversion of vitamin D3 into calcitriol by Actinomyces hyovaginalis isolate CCASU- A11-2. AMB Express. 2023 Jul 12;13(1):73. https://doi.org/10.1186/s13568-023-01574-3. PMID: 37434090
- Abo-Amer YE, Mohamed AA, Elhoseeny MM, et al. Association Between Vitamin D Receptor Polymorphism and the Response to Helicobacter Pylori Treatment. Infect Drug Resist. 2023 Jul 8;16:4463-4469. https://doi.org/10.2147/IDR.S414186. eCollection 2023. PMID: 37449247
- Artusa P, Lebel MÈ, Barbier C, et al. Cutting Edge: Aire Is a Coactivator of the Vitamin D Receptor. J Immunol. 2023 Jul 15;211(2):175-179. https://doi.org/10.4049/jimmunol.2300207. PMID: 37265392
- Bakke DS, Zhang J, Zhang Y, et al. Myeloid vitamin D receptor regulates Paneth cells and microbial homeostasis. FASEB J. 2023 Jun;37(6):e22957. https://doi.org/10.1096/fj.202202169RR. PMID: 37219463
- Bayat M, Razavi Moosavi N, Karimi N, et al. Increased Serum Levels of IL-1β after Ischemic Stroke are Inversely Associated with Vitamin D. Iran J Immunol. 2023 Jul 11;20(3). https://doi.org/10.22034/iji.2023.96384.2432. Online ahead of print. PMID: 37431715
- Berghaus LJ, Cathcart J, Berghaus RD, et al. Age-related changes in vitamin D metabolism and vitamin D receptor expression in equine alveolar macrophages: A preliminary study. Vet Immunol Immunopathol. 2023 May;259:110593. https://doi.org/10.1016/j.vetimm.2023.110593. Epub 2023 Apr 5. PMID: 37030152
- Chiewchalermsri C, Sangkanjanavanich S, Pradubpongsa P, et al. Randomized, Double-Blind, Placebo-Controlled Trial of Vitamin D Supplementation in the Build-up Phase of House Dust Mite-Specific Immunotherapy. Allergy Asthma Immunol Res. 2023 May;15(3):336-347. https://doi.org/10.4168/aair.2023.15.3.336. Epub 2023 Jan 2. PMID: 37075792
- Dos Santos VM, Sugai TAM. Visceral leishmaniasis and potential role of vitamin D. Acta Clin Belg. 2023 Jul 10:1-2. https://doi.org/10.1080/17843286.2023.2233235. Online ahead of print. PMID: 37424504
- Elahi N, Mankani MH, Shaikh FN. The effect of vitamin D deficiency on Inflammatory disorders. J Pak Med Assoc. 2023 May;73(5):1173. https://doi.org/10.47391/JPMA.7984. PMID: 37218277
- Fan Y, Chen J, Zhu X. Effect of Vitamin D on the HMGB1/RAGE Pathway and Adipokines Levels in Obese Asthmatic Mice. Iran J Allergy Asthma Immunol. 2023 Jun 16;22(3):254-264. https://doi.org/10.18502/ijaai.v22i3.13053. PMID: 37524662
- Fernandez GJ, Ramírez-Mejía JM, Castillo JA, et al. Vitamin D modulates expression of antimicrobial peptides and proinflammatory cytokines to restrict Zika virus infection in macrophages. Int Immunopharmacol. 2023 Jun;119:110232. https://doi.org/10.1016/j.intimp.2023.110232. Epub 2023 May 5. PMID: 37150017
- Gao N, Raduka A, Rezaee F. Vitamin D3 protects against respiratory syncytial virus-induced barrier dysfunction in airway epithelial cells via PKA signaling pathway. Eur J Cell Biol. 2023 Jun 22;102(3):151336. https://doi.org/10.1016/j.

ejcb.2023.151336. Online ahead of print. PMID: 37354621

- Ghaseminejad-Raeini A, Ghaderi A, Sharafi A, et al. Immunomodulatory actions of vitamin D in various immune-related disorders: a comprehensive review. Front Immunol. 2023 Jul 14;14:950465. https://doi.org/10.3389/fimmu.2023.950465. eCollection 2023. PMID: 37520529

- Grundmann SM, Herrero-Encinas J, Most E, et al. Effect of supplementation of vitamin D3 or vitamin D2 on serum concentrations of free and total 25-hydroxyvitamin D and the expression of genes involved in immune function in peripheral blood mononuclear cells of weaned pigs. Arch Anim Nutr. 2023 Jun;77(3):228-244. https://doi.org/10.1080/1745039X.2023.2219176. Epub 2023 Jun 19. PMID: 37335004

- Huang D, Guo Y, Li X, et al. Vitamin D3/VDR inhibits inflammation through NF-κB pathway accompanied by resisting apoptosis and inducing autophagy in abalone Haliotis discus hannai. Cell Biol Toxicol. 2023 Jun;39(3):885-906. https://doi.org/10.1007/s10565-021-09647-4. Epub 2021 Oct 12. PMID: 34637036

- Jones AW, Mironas A, Mur LAJ, et al. Vitamin D status modulates innate immune responses and metabolomic profiles following acute prolonged cycling. Eur J Nutr. 2023 Jul 17. https://doi.org/10.1007/s00394-023-03181-1. Online ahead of print. PMID: 37458775

- Ju F, Zhu R. Association of vitamin D levels and VDR variant (rs2228570) with allergic rhinitis: A meta-analysis and trial sequential analysis. Heliyon. 2023 Jun 14;9(6):e17283. https://doi.org/10.1016/j.heliyon.2023.e17283. eCollection 2023 Jun. PMID: 37426797

- Kalantari N, Sepidarkish M, Ghaffari S, et al. Does vitamin D reduce the mortality rate of Plasmodium infection?: a systematic review and meta-analysis. Malar J. 2023 Jun 5;22(1):173. https://doi.org/10.1186/s12936-023-04612-4. PMID: 37277818

- Khrais A, Mathew AG, Kahlam A, et al. Investigating the Correlation Between Clostridioides difficile Infection and Vitamin D Deficiency. Cureus. 2023 Jun 5;15(6):e39970. https://doi.org/10.7759/cureus.39970. eCollection 2023 Jun. PMID: 37416010

- King EM, Swann SA, Prior JC, et al. Vitamin D intakes among women living with and without HIV in Canada. HIV Med. 2023 May;24(5):628-639. https://doi.org/10.1111/hiv.13454. Epub 2023 Jan 4. PMID: 36597960

- Kise S, Iijima A, Nagao C, et al. Functional analysis of vitamin D receptor (VDR) using adenovirus vector. J Steroid Biochem Mol Biol. 2023 Jun;230:106275. https://doi.org/10.1016/j.jsbmb.2023.106275. Epub 2023 Feb 26. PMID: 36854350

- Laird E, O'Halloran AM, Molloy AM, et al. Vitamin D status & associations with inflammation in older adults. PLoS One. 2023 Jun 28;18(6):e0287169. https://doi.org/10.1371/journal.pone.0287169. eCollection 2023. PMID: 37379302

- Liu J, Wu X, Qin H, et al. RNF20/RNF40 ameliorates streptozotocin-induced type 1 diabetes by activating vitamin D receptors in vivo. Allergol Immunopathol (Madr). 2023 Jul 1;51(4):1-9. https://doi.org/10.15586/aei.v51i4.806. eCollection 2023. PMID: 37422774

- Sha S, Gwenzi T, Chen LJ, et al. About the associations of vitamin D deficiency and biomarkers of systemic inflammatory response with all-cause and cause-specific mortality in a general population sample of almost 400,000 UK Biobank participants. Eur J Epidemiol. 2023 Jun 21. https://doi.org/10.1007/s10654-023-01023-2. Online ahead of print. PMID: 37340242

- Song YJ, Zhang J, Xiao J, et al. Piscine Vitamin D Receptors Vdra/Vdrb in the Absence of Vitamin D Are Utilized by Grass Carp Reovirus for Promoting Viral Replication. Microbiol Spectr. 2023 Jul 19:e0128723. https://doi.org/10.1128/spectrum.01287-23. Online ahead of print. PMID: 37466438

- Thu VTA, Hoang TX, Kim JY. 1,25-Dihydroxy Vitamin D3 Facilitates the M2 Polarization and β-Amyloid Uptake by Human Microglia in a TREM2-Dependent Manner. Biomed Res Int. 2023 May 27;2023:3483411. https://doi.org/10.1155/2023/3483411. eCollection 2023. PMID: 37274074

- Waiden J, Heydarian M, Oak P, et al. Prenatal vitamin D supplementation mitigates inflammation-related alveolar remodeling in neonatal mice. Am J Physiol Lung Cell Mol Physiol. 2023 Aug 1;325(2):L95-L103. https://doi.org/10.1152/ajplung.00367.2022. Epub 2023 May 31. PMID: 37256661

- Xie G, Zhang Q, Fang Z, et al. Maternal Vitamin D and Inulin Supplementation in Oxidized Oil Diet Improves Growth Performance and Hepatic Innate Immunity in Offspring Mice. Antioxidants (Basel). 2023 Jun 28;12(7):1355. https://doi.org/10.3390/antiox12071355. PMID: 37507895

- Zhang C, Han Y, Miao L, et al. Human β-defensins are correlated with the immune infiltration and regulated by vitamin D3 in periodontitis. J Periodontal Res. 2023 Jul 13. https://doi.org/10.1111/jre.13159. Online ahead of print. PMID: 37439265

- Zhang Y, Zhou J, Hua L, et al. Vitamin D receptor (VDR) on the cell membrane of mouse macrophages participates in the formation of lipopolysaccharide tolerance: mVDR is related to the effect of artesunate to reverse LPS tolerance. Cell Commun Signal. 2023 May 29;21(1):124. https://doi.org/10.1186/s12964-023-01137-w. PMID: 37248534

- Zhang Y, Zhou XQ, Jiang WD, et al. Vitamin D Promotes Mucosal Barrier System of Fish Skin Infected with Aeromonas hydrophila through Multiple Modulation of Physical and Immune Protective Capacity. Int J Mol Sci. 2023 Jul 8;24(14):11243. https://doi.org/10.3390/ijms241411243. PMID: 37511003

LABORATORIO

- Alexandridou A, Schorr P, Volmer DA. Comparing derivatization reagents for quantitative LC-MS/MS analysis of a variety of vitamin D metabolites. Anal Bioanal Chem. 2023 Aug;415(19):4689-4701. https://doi.org/10.1007/s00216-023-04753-0. Epub 2023 May 23. PMID: 37219579

- Alexandridou A, Volmer DA. 2-fluoro-1-methylpyridinium p-toluene sulfonate: a new LC-MS/MS derivatization reagent for vitamin D metabolites. J Lipid Res. 2023 Jul 3;64(8):100409. https://doi.org/10.1016/j.jlr.2023.100409. Online ahead of print. PMID: 37406930

- Anusha T, Bhavani KS, Hassan RYA, et al. Ferrocene tagged primary antibody generates electrochemical signal: An electrochemical immunosensing platform for the monitoring of vitamin D deficiency in clinical samples. Int J Biol Macromol. 2023 Jun 1;239:124269. https://doi.org/10.1016/j.ijbiomac.2023.124269. Epub 2023 Mar 31. PMID: 37003374

- Bagheri N, Al Lawati HAJ, Hassanzadeh J, et al. Novel amino-functionalized magnetic metal-organic framework/layered double hydroxide adsorbent for microfluidic solid phase extraction: Application for vitamin D3. Talanta. 2023 May 1;256:124272. https://doi.org/10.1016/j.talanta.2023.124272. Epub 2023 Jan 19. PMID: 36709712

- Delrue C, Speeckaert MM. Vitamin D and Vitamin D Binding Protein in Health and Disease 2.0. Int J Mol Sci. 2023 Jun 19;24(12):10316. https://doi.org/10.3390/ijms241210316. PMID: 37373463

- Donnarumma D, Arena A, Trovato E, et al. A miniaturized comprehensive approach for total lipidome analysis and vitamin D metabolite quantification in human serum. Anal Bioanal Chem. 2023 Jul;415(18):4579-4590. https://doi.org/10.1007/s00216-023-04756-x. Epub 2023 May 25. PMID: 37225899

- Dugar A, Hoofnagle AN, Sanchez AP, et al. The Vitamin D Metabolite Ratio (VMR) is a Biomarker of Vitamin D Status That is Not Affected by Acute Changes in Vitamin D Binding Protein. Clin Chem. 2023 Jul 5;69(7):718-723. https://doi.org/10.1093/clinchem/hvad050. PMID: 37220642

- Gaikwad S, González CM, Vilariño D, et al. Corrigendum to "Lithocholic acid-based design of noncalcemic vitamin D receptor agonists" [Bioorg. Chem. 111 (2021) 104878]. Bioorg Chem. 2023 Jul;136:106559. https://doi.org/10.1016/j.bioorg.2023.106559. Epub 2023 May 4. PMID: 37148869

- Gqamana PP, Militello L, McMaster JM, et al. Analytical Concordance of Total Vitamin D on a Fully Automated Random-Access LC-MS/MS Platform. J Appl Lab Med. 2023 Jul 20:jfad036. https://doi.org/10.1093/jalm/jfad036. Online ahead of print. PMID: 37473445

- Hashemi SH, Kaykhaii M, Jamali Keikha A, et al. Deep Eutectic Solvent Stir Bar Sorptive Extraction: A Rapid Microextraction Technique for the Determination of Vitamin D3 by Spectrophotometry. ACS Omega. 2023 Jun 23;8(26):23643-23650. https://doi.org/10.1021/acsomega.3c01670. eCollection 2023 Jul 4. PMID: 37426244

- Jacobs J, Vanneste F, Hotton J, et al. Undisclosed interference in 25-OH-Vitamin D immunoassay on Liaison XL analyzer when using heparin plasma tubes. Scand J Clin Lab Invest. 2023 Jul 28:1-4. https://doi.org/10.1080/00365513.2023.2241356. Online ahead of print. PMID: 37504570

- Kushioka T, Mano H, Matsuoka S, et al. Analysis of vitamin D metabolites in biological samples using a nanoluc-based vitamin D receptor ligand sensing system: NLucVDR. J Steroid Biochem Mol Biol. 2023 Jul 28;233:106367. https://doi.org/10.1016/j.jsbmb.2023.106367. Online ahead of print. PMID: 37517743

- Maekawa K, Ishizawa M, Ikawa T, et al. Syntheses of 25-Adamantyl-25-alkyl-2-methylidene-1α,25-dihydroxyvitamin D3 Derivatives with Structure-Function Studies of Antagonistic and Agonistic Active Vitamin D Analogs. Biomolecules. 2023 Jul 6;13(7):1082. https://doi.org/10.3390/biom13071082. PMID: 37509118

- Maged K, El-Henawee MM, Abd El-Hay SS. Development and validation of an eco-friendly HPLC-UV method for determination of atorvastatin and vitamin D3 in pure form and pharmaceutical formulation. BMC Chem. 2023 Jun 20;17(1):62. https://doi.org/10.1186/s13065-023-00975-6. PMID: 37340490

- Micalizzi G, Vento F, Buzzanca C, et al. Fast gas chromatography-tandem mass spectrometry under milder electron ionization conditions for the assay of vitamin D metabolites in human serum. J Chromatogr B Analyt Technol Biomed Life Sci. 2023 Jul 4;1227:123813. https://doi.org/10.1016/j.jchromb.2023.123813. Online ahead of print. PMID: 37451138

- Schorr P, Stokes CS, Volmer DA. Improved quantitative LC-MS/MS analysis of vitamin D metabolites in serum after one-pot double derivatization. J Pharm Biomed Anal. 2023 Jun 14;234:115522. https://doi.org/10.1016/j.jpba.2023.115522. Online ahead of print. PMID: 37329649

- Takada K, Ogawa S, Yoshida N, et al. Separation and identification of monoglucuronides of vitamin D3 metabolites in urine by derivatization-assisted LC/ESI-MS/MS using a new Cookson-type reagent. Anal Sci. 2023 Jul;39(7):1053-1063. https://doi.org/10.1007/s44211-023-00350-4. Epub 2023 May 2. PMID: 37131118

- Tuma C, Thomas A, Braun H, et al. Quantification of 25-hydroxyvitamin D2 and D3 in Mitra® devices with volumetric absorptive microsampling technology (VAMS®) by UHPLC-HRMS for regular vitamin D status monitoring. J Pharm Biomed Anal. 2023 May 10;228:115314. https://doi.org/10.1016/j.jpba.2023.115314. Epub 2023 Mar 1. PMID: 36870118

- Usama, Khan Z, Ali A, et al. Differential glycosylation in mutant vitamin D-binding protein decimates the binding stability of vitamin D. J Biomol Struct Dyn. 2023 Jun 25:1-11. https://doi.org/10.1080/07391102.2023.2226742. Online ahead of print. PMID: 37357441

- Wise SA, Hahm G, Burdette CQ, et al. Determination of 24,25-dihydroxyvitamin D3 in Vitamin D External Quality Assessment Scheme samples using a reference measurement procedure. J Steroid Biochem Mol Biol. 2023 Jul;231:106318. https://doi.org/10.1016/j.jsbmb.2023.106318. Epub 2023 May 9. PMID: 37169270

- Yazdi ZS, Streeten EA, Whitlatch HB, et al. Critical Role for 24-Hydroxylation in Homeostatic Regulation of Vitamin D Metabolism. medRxiv. 2023 Jun 28:2023.06.27.23291942. https://doi.org/10.1101/2023.06.27.23291942. Preprint. PMID: 37425945

MISCELLANEA

- Alpert JS. Hey, Doc, Should I be Taking Vitamin D Capsules Just Like My Neighbor? Am J Med. 2023 May 4:S0002-9343(23)00307-8. https://doi.org/10.1016/j.amjmed.2023.04.024. Online ahead of print. PMID: 37148988

- Asif A, Farooq N. Vitamin D Toxicity. 2023 May 24. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan–. PMID: 32491799

- Awad EA, Torky MA, Bassiouny RM, et al. Thyroid gland dysfunction and vitamin D receptor gene polymorphism in keratoconus. Eye (Lond). 2023 Jun;37(8):1602-1607. https://doi.org/10.1038/s41433-022-02172-6. Epub 2022 Aug 1. PMID: 35915233

- Bantwal G. A Review on Vitamin D Deficiency and Related Disorders: What is the Right Serum Vitamin D Level? J Assoc Physicians India. 2023 May;71(5):11-12. https://doi.org/10.5005/japi-11001-0240. PMID: 37355824

- Bergman P. Authors reply: Low vitamin D is a marker for poor health and in-

creased risk for disease - but causality is still unclear in most cases. J Intern Med. 2023 Jun;293(6):793-794. https://doi.org/10.1111/joim.13622. Epub 2023 Mar 5. PMID: 36871252

- Borkowski J, Stefaniak T, Cych P. Changes in Skeletal Muscle Troponin T and Vitamin D Binding Protein (DBP) Concentrations in the Blood of Male Amateur Athletes Participating in a Marathon and 100 km Adventure Race. Int J Environ Res Public Health. 2023 May 1;20(9):5692. https://doi.org/10.3390/ijerph20095692. PMID: 37174210

- Bouillon R, LeBoff MS, Neale RE. Health Effects of Vitamin D Supplementation: Lessons Learned From Randomized Controlled Trials and Mendelian Randomization Studies. J Bone Miner Res. 2023 Jul 22. https://doi.org/10.1002/jbmr.4888. Online ahead of print. PMID: 37483080

- Brennan E, Butler AE, Nandakumar M, et al. Association between Organochlorine Pesticides and Vitamin D in Female Subjects. Biomedicines. 2023 May 15;11(5):1451. https://doi.org/10.3390/biomedicines11051451. PMID: 37239122

- Brenner H. The Role of Vitamin D for Human Health: The Challenge of the Right Study Designs and Interpretation. Nutrients. 2023 Jun 27;15(13):2897. https://doi.org/10.3390/nu15132897. PMID: 37447223

- Butler AE, Brennan E, Drage DS, et al. Association of flame retardants, polybrominated diethyl ethers (PBDEs), with vitamin D in female subjects. Chemosphere. 2023 Oct;338:139488. https://doi.org/10.1016/j.chemosphere.2023.139488. Epub 2023 Jul 11. PMID: 37442384

- Butler AE, Brennan E, Drage DS, et al. Association of polychlorinated biphenyls with vitamin D in female subjects. Environ Res. 2023 Jun 19;233:116465. https://doi.org/10.1016/j.envres.2023.116465. Online ahead of print. PMID: 37343756

- Cao M, He C, Gong M, et al. The effects of vitamin D on all-cause mortality in different diseases: an evidence-map and umbrella review of 116 randomized controlled trials. Front Nutr. 2023 Jun 22;10:1132528. https://doi.org/10.3389/fnut.2023.1132528. eCollection 2023. PMID: 37426183

- Cardwell G, Bornman JF, James AP, et al. Effect of household cooking on the retention of vitamin D2 and 25-hydroxyvitamin D2 in pulse UV-irradiated, air-dried button mushrooms (Agaricus bisporus). Food Chem. 2023 Oct 30;424:136387. https://doi.org/10.1016/j.foodchem.2023.136387. Epub 2023 May 16. PMID: 37224637

- Carlberg C, Raczyk M, Zawrotna N. Vitamin D: A master example of nutrigenomics. Redox Biol. 2023 Jun;62:102695. https://doi.org/10.1016/j.redox.2023.102695. Epub 2023 Apr 5. PMID: 37043983

- Carlberg C. Genomic signaling of vitamin D. Steroids. 2023 Jul 11;198:109271. https://doi.org/10.1016/j.steroids.2023.109271. Online ahead of print. PMID: 37442517

- Carlsson H, Sreenivasan AP, Erngren I, et al. Combining the targeted and untargeted screening of environmental contaminants reveals associations between PFAS exposure and vitamin D metabolism in human plasma. Environ Sci Process Impacts. 2023 Jun 21;25(6):1116-1130. https://doi.org/10.1039/d3em00060e. PMID: 37222023

- Chaves MA, Dacanal GC, Pinho SC. High-shear wet agglomeration process for enriching cornstarch with curcumin and vitamin D3 co-loaded lyophilized liposomes. Food Res Int. 2023 Jul;169:112809. https://doi.org/10.1016/j.foodres.2023.112809. Epub 2023 Apr 15. PMID: 37254385

- Ciarambino T, Crispino P, Minervini G, et al. Vitamin D: Can Gender Medicine Have a Role? Biomedicines. 2023 Jun 19;11(6):1762. https://doi.org/10.3390/biomedicines11061762. PMID: 37371857

- Clark A, Kuznesof S, Waller A, et al. The Influence of Storage and Cooking on the Vitamin D Content of 25-Hydroxyvitamin D3-Enriched Eggs. Foods. 2023 Jun 28;12(13):2522. https://doi.org/10.3390/foods12132522. PMID: 37444260

- Crafa A, Cannarella R, Barbagallo F, et al. Mechanisms Suggesting a Relationship between Vitamin D and Erectile Dysfunction: An Overview. Biomolecules. 2023 Jun 1;13(6):930. https://doi.org/10.3390/biom13060930. PMID: 37371510

- Dambrós BF, Batista da Silva H, de Moura KRS, et al. Influence of the aquatic environment and 1α,25(OH)2 vitamin D3 on calcium influx in the intestine of adult zebrafish. Biochimie. 2023 Jul 8;214(Pt B):123-133. https://doi.org/10.1016/j.biochi.2023.07.004. Online ahead of print. PMID: 37429409

- Di Giorgio G, Relucenti M, Iaculli F, et al. The Application of a Fluoride-and-Vitamin D Solution to Deciduous Teeth Promotes Formation of Persistent Mineral Crystals: A Morphological Ex-Vivo Study. Materials (Basel). 2023 May 29;16(11):4049. https://doi.org/10.3390/ma16114049. PMID: 37297180

- Dosi MCM, Riggs CM, May J, et al. Thoroughbred Racehorses in Hong Kong Require Vitamin D Supplementation to Mitigate the Risk of Low Vitamin D Status. Animals (Basel). 2023 Jun 29;13(13):2145. https://doi.org/10.3390/ani13132145. PMID: 37443942

- Draxler A, Franzke B, Kelecevic S, et al. The influence of vitamin D supplementation and strength training on health biomarkers and chromosomal damage in community-dwelling older adults. Redox Biol. 2023 May;61:102640. https://doi.org/10.1016/j.redox.2023.102640. Epub 2023 Feb 21. PMID: 36857929

- Ebrahimi A, Hamishehkar H, Amjadi S. Development of gelatin-coated nanoliposomes loaded with β-cyclodextrin/vitamin D3 inclusion complex for nutritional therapy. Food Chem. 2023 Oct 30;424:136346. https://doi.org/10.1016/j.foodchem.2023.136346. Epub 2023 May 11. PMID: 37201470

- Fitzgerald JS, Swanson BJ, Larson-Meyer DE. Vitamin D Knowledge, Awareness, and Attitudes of Adolescents and Adults: A Systematic Review. J Nutr Educ Behav. 2023 Aug;55(8):585-595. https://doi.org/10.1016/j.jneb.2023.04.010. Epub 2023 Jun 30. PMID: 37389497

- Forouhari A, Heidari-Beni M, Veisi S, et al. Effect of epigenetics on vitamin D levels: a systematic review until December 2020. Arch Public Health. 2023 Jun 15;81(1):106. https://doi.org/10.1186/s13690-023-01122-2. PMID: 37322552

- Gallagher JC, Rosen CJ. Vitamin D: 100 years of discoveries, yet controversy continues. Lancet Diabetes Endocrinol. 2023 May;11(5):362-374. https://doi.

org/10.1016/S2213-8587(23)00060-8. Epub 2023 Mar 30. PMID: 37004709

- Ganie MA, Sidana S, Baba MS, et al. Efficacy and safety of various oral regimens (three oral doses) and schedules (daily v. monthly) of cholecalciferol in North Indian adults with low vitamin D status: evidence from a randomised controlled trial. Br J Nutr. 2023 May 28;129(10):1732-1739. https://doi.org/10.1017/S0007114522002641. Epub 2022 Aug 19. PMID: 35983775
- Gezen-Ak D, Alaylıoğlu M, Yurttaş Z, et al. Vitamin D receptor regulates transcription of mitochondrial DNA and directly interacts with mitochondrial DNA and TFAM. J Nutr Biochem. 2023 Jun;116:109322. https://doi.org/10.1016/j.jnutbio.2023.109322. Epub 2023 Mar 23. PMID: 36963731
- Gómez-Bouzó U, Belorusova AY, Rivadulla ML, et al. Structural analysis and biological activities of C25-amino and C25-nitro vitamin D analogs. Bioorg Chem. 2023 Jul;136:106528. https://doi.org/10.1016/j.bioorg.2023.106528. Epub 2023 Apr 6. PMID: 37054528
- Gospodarska E, Ghosh Dastidar R, Carlberg C. Intervention Approaches in Studying the Response to Vitamin D3 Supplementation. Nutrients. 2023 Jul 29;15(15):3382. https://doi.org/10.3390/nu15153382. PMID: 37571318
- Grant WB, Boucher BJ. Regarding: Low vitamin D is a marker for poor health and increased risk for disease: But causality is still unclear in most cases. J Intern Med. 2023 Jun;293(6):791-792. https://doi.org/10.1111/joim.13621. Epub 2023 Feb 22. PMID: 36814179
- Grant WB, van Amerongen BM, Boucher BJ. Periodontal Disease and Other Adverse Health Outcomes Share Risk Factors, including Dietary Factors and Vitamin D Status. Nutrients. 2023 Jun 17;15(12):2787. https://doi.org/10.3390/nu15122787. PMID: 37375691
- Gudeman AS, Dine SA, Walroth TA, et al. Characterization of vitamin D deficiency and use of a standardized supplementation protocol in orthopaedic trauma patients. Eur J Orthop Surg Traumatol. 2023 May;33(4):955-960. https://doi.org/10.1007/s00590-022-03231-0. Epub 2022 Mar 1. PMID: 35230543
- Habacher G, Malik R, Lait PJ, et al. Feline precision medicine using whole-exome sequencing identifies a novel frameshift mutation for vitamin D-dependent rickets type 2. J Feline Med Surg. 2023 Jun;25(6):1098612X231165630. https://doi.org/10.1177/1098612X231165630. PMID: 37387221
- Hassanin HM, Ismail OI. Could vitamin D protect against high fat diet induced damage in the arcuate nucleus in the rat: histological, immunohistochemical and ultrastructural study. Ultrastruct Pathol. 2023 Jul 4;47(4):292-303. https://doi.org/10.1080/01913123.2023.2195484. Epub 2023 Mar 29. PMID: 36992558
- Hendi NN, Nemer G. Epigenetic regulation of vitamin D deficiency. Epigenomics. 2023 Jul 18. https://doi.org/10.2217/epi-2023-0246. Online ahead of print. PMID: 37461377
- Hnokaew P, Moonmanee T, Phatsara C, et al. Effect of UV-B irradiated vitamin D enriched yeast supplementation on milk performance and blood chemical profiles in dairy cows. Anim Biosci. 2023 May 4. https://doi.org/10.5713/ab.23.0013. Online ahead of print. PMID: 37170501
- Horváth L, Mirani S, Girgis MMF, et al. Six years' experience and trends of serum 25-hydroxy vitamin D concentration and the effect of vitamin D3 consumption on these trends. Front Pharmacol. 2023 Jul 14;14:1232285. https://doi.org/10.3389/fphar.2023.1232285. eCollection 2023. PMID: 37521483
- Hu T, Ren L, Li H, et al. Effects of Vitamin D supplementation or deficiency on metabolic phenotypes in mice of different sexes. J Steroid Biochem Mol Biol. 2023 May;229:106250. https://doi.org/10.1016/j.jsbmb.2023.106250. Epub 2023 Jan 25. PMID: 36708934
- Huang J, Lei J, Ge A, et al. Antifungal Effect of Vitamin D3 against Cryptococcus neoformans Coincides with Reduced Biofilm Formation, Compromised Cell Wall Integrity, and Increased Generation of Reactive Oxygen Species. J Fungi (Basel). 2023 Jul 21;9(7):772. https://doi.org/10.3390/jof9070772. PMID: 37504760
- Huh KY, Lee H, Lee S, et al. Exploration of smart adherence-monitoring methods in vitamin D-deficient patients: A pilot feasibility clinical study. Clin Transl Sci. 2023 Jul 18. https://doi.org/10.1111/cts.13594. Online ahead of print. PMID: 37461832
- Iwasaki M, Motokawa K, Shirobe M, et al. Serum levels of vitamin D and periodontal inflammation in community-dwelling older Japanese adults: The Otassha Study. J Clin Periodontol. 2023 Jun 15. https://doi.org/10.1111/jcpe.13834. Online ahead of print. PMID: 37317881
- Jodar E, Campusano C, de Jongh RT, et al. Calcifediol: a review of its pharmacological characteristics and clinical use in correcting vitamin D deficiency. Eur J Nutr. 2023 Jun;62(4):1579-1597. https://doi.org/10.1007/s00394-023-03103-1. Epub 2023 Mar 2. PMID: 36862209
- Kandambeth V, Nagrale P, Daigavane S. Estimation of Vitamin D Levels in Patients With Retinal Vein Occlusions and a Comparison With Age-Matched Control Groups. Cureus. 2023 May 11;15(5):e38909. https://doi.org/10.7759/cureus.38909. eCollection 2023 May. PMID: 37313088
- Kearns MD, Binongo JNG, Watson D, et al. Correction: The effect of a single, large bolus of vitamin D in healthy adults over the winter and following year: a randomized, double-blind, placebo-controlled trial. Eur J Clin Nutr. 2023 Jun;77(6):698. https://doi.org/10.1038/s41430-023-01277-9. PMID: 37161066
- Kim KJ, Choi J, Kim KJ, et al. All-cause and cause-specific mortality risks associated with calcium supplementation with or without vitamin D: A nationwide population-based study. J Intern Med. 2023 Jul;294(1):83-95. https://doi.org/10.1111/joim.13643. Epub 2023 Apr 24. PMID: 37056045
- Kopp L, Schweinlin A, Tingö L, et al. Potential Modulation of Inflammation and Physical Function by Combined Probiotics, Omega-3 Supplementation and Vitamin D Supplementation in Overweight/Obese Patients with Chronic Low-Grade Inflammation: A Randomized, Placebo-Controlled Trial. Int J Mol Sci. 2023 May 10;24(10):8567. https://doi.org/10.3390/ijms24108567. PMID: 37239916
- Kose Celebi N, Deveci HS, Kulekci Ozturk S, et al. Clinical role of vitamin D, vitamin B12, folate levels and hematological parameters in patients with sudden sensorineural hearing loss. Acta Otolaryngol. 2023 Jul 27:1-6. https://doi.org/10.1080/00

016489.2023.2235398. Online ahead of print. PMID: 37498186

- Lange U, Schulz N, Klemm P. [Lifestyle medication vitamin D. What evidence is available?]. Z Rheumatol. 2023 Jul 28. https://doi.org/10.1007/s00393-023-01392-9. Online ahead of print. PMID: 37505295
- Lee JH, Kim YA, Kim YS, et al. Association between Vitamin D Deficiency and Clinical Parameters in Men and Women Aged 50 Years or Older: A Cross-Sectional Cohort Study. Nutrients. 2023 Jul 5;15(13):3043. https://doi.org/10.3390/nu15133043. PMID: 37447368
- Lestari MI, Murti K, Liberty IA, et al. Association of vitamin D with deoxyribonucleic acid (dna) damage: A systematic review of animal and human studies. Acta Biochim Pol. 2023 Jun 17;70(2):379-387. https://doi.org/10.18388/abp.2020_6641. PMID: 37329504
- Li Y, Wang J, Cai Y, et al. Association of Serum Vitamin D With Periodontal Disease. Int Dent J. 2023 Jul 5:S0020-6539(23)00095-3. https://doi.org/10.1016/j.identj.2023.06.004. Online ahead of print. PMID: 37419778
- Liang F, Zhou Y, Zhang Z, et al. Association of vitamin D in individuals with periodontitis: an updated systematic review and meta-analysis. BMC Oral Health. 2023 Jun 13;23(1):387. https://doi.org/10.1186/s12903-023-03120-w. PMID: 37312090
- Liermann W, Halle I, Frahm J, et al. Genotype-dependent impact of dietary vitamin D3 on laying hens. Arch Anim Nutr. 2023 Jun;77(3):205-227. https://doi.org/10.1080/1745039X.2023.2212574. Epub 2023 Jun 1. PMID: 37263588
- Liu X, Dai B, Chuai Y, et al. Associations between vitamin D levels and periodontal attachment loss. Clin Oral Investig. 2023 Aug;27(8):4727-4733. https://doi.org/10.1007/s00784-023-05100-4. Epub 2023 Jun 8. PMID: 37291391
- Lu X, Chen Z, Lu J, et al. Effects of Topical 1,25 and 24,25 Vitamin D on Diabetic, Vitamin D Deficient and Vitamin D Receptor Knockout Mouse Corneal Wound Healing. Biomolecules. 2023 Jul 1;13(7):1065. https://doi.org/10.3390/biom13071065. PMID: 37509101
- Luo Y, Qu C, Zhang R, et al. Diet, physical activity, and UV protection comprehensively influenced vitamin D status in college students: a cross-section study from China. J Health Popul Nutr. 2023 Jul 26;42(1):73. https://doi.org/10.1186/s41043-023-00421-2. PMID: 37496103
- Maggini V, Crescioli G, Ippoliti I, et al. Safety Profile of Vitamin D in Italy: An Analysis of Spontaneous Reports of Adverse Reactions Related to Drugs and Food Supplements. J Clin Med. 2023 Jul 17;12(14):4726. https://doi.org/10.3390/jcm12144726. PMID: 37510843
- Manca A, Mula J, Palermiti A, et al. Vitamin D impact in affecting clozapine plasma exposure: A potential contribution of seasonality. Biomed Pharmacother. 2023 Jul 4;165:115103. https://doi.org/10.1016/j.biopha.2023.115103. Online ahead of print. PMID: 37413901
- Markopoulos G, Agrogiannis G, Perrea DN, et al. Evaluation of Vitamin D-enriched Bone Graft in Surgically-induced Critical-sized Bone Defects: An experimental study. J Craniofac Surg. 2023 Jun 19. https://doi.org/10.1097/SCS.0000000000009490. Online ahead of print. PMID: 37336500
- Molina-López J, Herrera-Quintana L, Vázquez-Lorente H, et al. Evolution of Vitamin D Status and Vitamin D Receptor Gene Expression Among Professional Handball Athletes During a Competitive Period. Relationship with Body Composition, Calcium, Magnesium and Phosphorous. Biol Trace Elem Res. 2023 Jul 6. https://doi.org/10.1007/s12011-023-03760-7. Online ahead of print. PMID: 37410265
- Narvaiz DA, Kwok EM, Hodges SL, et al. Vitamin D supplementation positively affects activity but impairs stimulus response behavior in an age and sex specific manner in C57BL/6 mice. Neurotoxicol Teratol. 2023 Jul-Aug;98:107180. https://doi.org/10.1016/j.ntt.2023.107180. Epub 2023 May 7. PMID: 37160210
- Nascimento IMCD, Padilha BM, Araujo MLD, et al. VITAMIN D LEVELS AND LIPID PROFILE IN PATIENTS UNDERGOING BARIATRIC SURGERY. Arq Bras Cir Dig. 2023 Jul 28;36:e1753. https://doi.org/10.1590/0102-672020230035e1753. eCollection 2023. PMID: 37531473
- Neill HR, Gill CIR, McDonald EJ, et al. Improving vitamin D content in pork meat by UVB biofortification. Meat Sci. 2023 May;199:109115. https://doi.org/10.1016/j.meatsci.2023.109115. Epub 2023 Jan 14. PMID: 36753832
- Nield L, Bowles SD. Assessment, treatment and prevention of vitamin D deficiency. Nurs Stand. 2023 Aug 2;38(8):70-77. https://doi.org/10.7748/ns.2023.e12136. Epub 2023 Jul 31. PMID: 37519156
- Norlin M, Wikvall K. Enzymatic activation in vitamin D signaling - Past, present and future. Arch Biochem Biophys. 2023 Jul 1;742:109639. https://doi.org/10.1016/j.abb.2023.109639. Epub 2023 May 18. PMID: 37196753
- Nuti R, Gennari L, Cavati G, et al. Dietary Vitamin D Intake in Italian Subjects: Validation of a Frequency Food Questionnaire (FFQ). Nutrients. 2023 Jun 29;15(13):2969. https://doi.org/10.3390/nu15132969. PMID: 37447294
- Oda Y, Wong CT, Oh DH, et al. Vitamin D receptor cross-talk with p63 signaling promotes epidermal cell fate. J Steroid Biochem Mol Biol. 2023 Jun 16;232:106352. https://doi.org/10.1016/j.jsbmb.2023.106352. Online ahead of print. PMID: 37330071
- Orsatti CL, Orsatti FL, de Souza JPEA, et al. Impact of vitamin D supplementation on modulating heat-shock proteins in postmenopausal women: a randomized, double-blind, placebo-controlled study. Menopause. 2023 Jul 1;30(7):758-765. https://doi.org/10.1097/GME.0000000000002197. PMID: 37220771
- Park S, Kang S. Interaction of polygenetic variants related to inflammation with carbohydrate and vitamin D intakes in middle-aged and older adults in a large hospital-based cohort. Br J Nutr. 2023 Jul 28;130(2):331-343. https://doi.org/10.1017/S0007114522001453. Epub 2022 May 10. PMID: 35535979
- Passeri G, Giannini S. Benefits of Vitamin D in Health and Diseases. Nutrients. 2023 May 23;15(11):2419. https://doi.org/10.3390/nu15112419. PMID: 37299383
- Patel S, Patel S, Shah RM, et al. Effects of sun protection on serum vitamin D defi-

ciency. Photodermatol Photoimmunol Photomed. 2023 Jul;39(4):394-396. https://doi.org/10.1111/phpp.12838. Epub 2022 Oct 20. PMID: 36181727

- Pellegrino G, Ascenti V, Desiderio E, et al. Vitamin D intoxication: myth or reality. Minerva Med. 2023 Jul 18. https://doi.org/10.23736/S0026-4806.23.08795-5. Online ahead of print. PMID: 37462476
- Przewłócka K, Kujach S, Sawicki P, et al. Effects of Probiotics and Vitamin D3 Supplementation on Sports Performance Markers in Male Mixed Martial Arts Athletes: A Randomized Trial. Sports Med Open. 2023 May 16;9(1):31. https://doi.org/10.1186/s40798-023-00576-6. PMID: 37193828
- Radhakrishnan A, Spencer S, Yanamala N, et al. Evaluating the Efficacy and Safety of EZC Pak, a 5-Day Combination Echinacea-Zinc-Vitamin C Dose Pack with or without Vitamin D, in the Management of Outpatient Upper Respiratory Infections. Infect Drug Resist. 2023 May 3;16:2561-2572. https://doi.org/10.2147/IDR.S392087. eCollection 2023. PMID: 37163146
- Rahman F, Brates I, Aweeka F, et al. Evaluating the effect of atorvastatin exposure and vitamin D levels on lipid outcomes in people with HIV-1 with suppressed HIV-1 RNA and LDL cholesterol <130 mg/dL. HIV Med. 2023 Jun;24(6):749-753. https://doi.org/10.1111/hiv.13453. Epub 2022 Dec 22. PMID: 36549898
- Raymond-Lezman JR, Riskin SI. Benefits and Risks of Sun Exposure to Maintain Adequate Vitamin D Levels. Cureus. 2023 May 5;15(5):e38578. https://doi.org/10.7759/cureus.38578. eCollection 2023 May. PMID: 37284402
- Rebelos E, Tentolouris N, Jude E. The Role of Vitamin D in Health and Disease: A Narrative Review on the Mechanisms Linking Vitamin D with Disease and the Effects of Supplementation. Drugs. 2023 Jun;83(8):665-685. https://doi.org/10.1007/s40265-023-01875-8. Epub 2023 May 6. PMID: 37148471
- Reid C, Flores-Villalva S, Remot A, et al. Long-term in vivo vitamin D3 supplementation modulates bovine IL-1 and chemokine responses. Sci Rep. 2023 Jul 5;13(1):10846. https://doi.org/10.1038/s41598-023-37427-z. PMID: 37407588
- Repas SJ, Schmeusser BN, McCullough WP, et al. Normal 24-hour urine calcium concentrations after long-term daily oral intake of vitamin D in doses ranging from 5000 to 50,000 international units in 14 adult hospitalized psychiatric patients. J Steroid Biochem Mol Biol. 2023 Jul;231:106329. https://doi.org/10.1016/j.jsbmb.2023.106329. Epub 2023 May 12. PMID: 37182752
- Ribeiro LSFE, Araujo NS, Zilli Vieira CL, et al. Impact of serum vitamin D levels on periodontal healing outcomes: A preliminary cohort study. Int J Dent Hyg. 2023 May;21(2):291-297. https://doi.org/10.1111/idh.12619. Epub 2022 Sep 11. PMID: 36048921
- Rohdin C, Wang C, Brander G, et al. Mutations in the CYP27B1 gene cause vitamin D dependent rickets in pugs. J Vet Intern Med. 2023 Jul-Aug;37(4):1507-1513. https://doi.org/10.1111/jvim.16791. Epub 2023 Jun 9. PMID: 37293695
- Ruiz-González A, Suissi W, Baumgard LH, et al. Increased dietary vitamin D3 and calcium partially alleviate heat stress symptoms and inflammation in lactating Holstein cows independent of dietary concentrations of vitamin E and selenium. J Dairy Sci. 2023 Jun;106(6):3984-4001. https://doi.org/10.3168/jds.2022-22345. Epub 2023 May 8. PMID: 37164847
- Sanford BS, Aliano JL, Omary CS, et al. Exposure to a Vitamin D Best Practices Toolkit, Model, and E-Tools Increases Knowledge, Confidence, and the Translation of Research to Public Health and Practice. Nutrients. 2023 May 24;15(11):2446. https://doi.org/10.3390/nu15112446. PMID: 37299409
- Santa K, Watanabe K, Kumazawa Y, et al. Phytochemicals and Vitamin D for a Healthy Life and Prevention of Diseases. Int J Mol Sci. 2023 Jul 29;24(15):12167. https://doi.org/10.3390/ijms241512167. PMID: 37569540
- Santos HO, Martins CEC, Forbes SC, et al. A Scoping Review of Vitamin D for Nonskeletal Health: A Framework for Evidence-based Clinical Practice. Clin Ther. 2023 May;45(5):e127-e150. https://doi.org/10.1016/j.clinthera.2023.03.016. Epub 2023 Apr 18. PMID: 37080887
- Sarsitthithum K, Wisupagan T, Kiatthanabumrung S, et al. The Association Between Serum Vitamin D Levels and Benign Paroxysmal Positional Vertigo. Ear Nose Throat J. 2023 Jul;102(7):473-477. https://doi.org/10.1177/01455613211008561. Epub 2021 Apr 18. PMID: 33866868
- Sauvé B, Chorfi Y, Montminy ML, et al. Vitamin D Supplementation Impacts Calcium and Phosphorus Metabolism in Piglets Fed a Diet Contaminated with Deoxynivalenol and Challenged with Lipopolysaccharides. Toxins (Basel). 2023 Jun 13;15(6):394. https://doi.org/10.3390/toxins15060394. PMID: 37368695
- Schoenmakers I, Fraser WD, Forbes A. Vitamin D and acute and severe illness - a mechanistic and pharmacokinetic perspective. Nutr Res Rev. 2023 Jun;36(1):23-38. https://doi.org/10.1017/S0954422421000251. Epub 2021 Aug 9. PMID: 34369338
- Schrack JA, Cai Y, Urbanek JK, et al. The association of vitamin D supplementation and serum vitamin D levels with physical activity in older adults: Results from a randomized trial. J Am Geriatr Soc. 2023 Jul;71(7):2208-2218. https://doi.org/10.1111/jgs.18290. Epub 2023 Feb 23. PMID: 36821761 Clinical Trial.
- Simonova N, Kirichek M, Trofimova AA, et al. The Functional States of the Participants of a Marine Arctic Expedition with Different Levels of Vitamin D in Blood. Int J Environ Res Public Health. 2023 Jun 9;20(12):6092. https://doi.org/10.3390/ijerph20126092. PMID: 37372679
- Sivagurunathan U, Dominguez D, Tseng Y, et al. Interaction between Dietary Vitamin D3 and Vitamin K3 in Gilthead Seabream Larvae (Sparus aurata) in Relation to Growth and Expression of Bone Development-Related Genes. Aquac Nutr. 2023 May 23;2023:3061649. https://doi.org/10.1155/2023/3061649. eCollection 2023. PMID: 37260465
- Takacs I, Bakos B, Nemeth Z, et al. Controlled randomized open label clinical study comparing the safety and efficacy of loading schedules in vitamin D deficient patients. J Steroid Biochem Mol Biol. 2023 Jul;231:106330. https://doi.org/10.1016/j.jsbmb.2023.106330. Epub 2023 May 12. PMID: 37182754
- Talvas J, Norgieux C, Burban E, et al. Vitamin D deficiency contributes to overtraining syndrome in excessive trained

C57BL/6 mice. Scand J Med Sci Sports. 2023 Jul 14. https://doi.org/10.1111/sms.14449. Online ahead of print. PMID: 37452567

- Thiering E, Markevych I, Kress S, et al. Gene-environment interaction in the association of residential greenness and 25(OH) vitamin D. Environ Pollut. 2023 Jun 15;327:121519. https://doi.org/10.1016/j.envpol.2023.121519. Epub 2023 Mar 27. PMID: 36990343
- Trifan DF, Tirla AG, Moldovan AF, et al. Can Vitamin D Levels Alter the Effectiveness of Short-Term Facelift Interventions? Healthcare (Basel). 2023 May 20;11(10):1490. https://doi.org/10.3390/healthcare11101490. PMID: 37239776
- Vatanparast H, Longworth ZL. How does Canada's new vitamin D fortification policy affect the high prevalence of inadequate intake of the vitamin? Appl Physiol Nutr Metab. 2023 Jun 30. https://doi.org/10.1139/apnm-2023-0178. Online ahead of print. PMID: 37390498
- Wei X, Pandohee J, Xu B. Recent developments and emerging trends in dietary vitamin D sources and biological conversion. Crit Rev Food Sci Nutr. 2023 Jun 26:1-17. https://doi.org/10.1080/10408398.2023.2220793. Online ahead of print. PMID: 37357915
- Wiedemann J, Cursiefen C. [Band keratopathy in ectopic vitamin D production in sarcoidosis]. Ophthalmologie. 2023 Jul;120(7):763-766. https://doi.org/10.1007/s00347-022-01679-3. Epub 2022 Jul 19. PMID: 35925356
- Wimalawansa SJ. Physiological Basis for Using Vitamin D to Improve Health. Biomedicines. 2023 May 26;11(6):1542. https://doi.org/10.3390/biomedicines11061542. PMID: 37371637
- Wolf AT, Klawe J, Liu B, et al. Association Between Serum Vitamin D Levels and Myopia in the National Health and Nutrition Examination Survey (2001-2006). Ophthalmic Epidemiol. 2023 Jul 6:1-11. https://doi.org/10.1080/09286586.2023.2232460. Online ahead of print. PMID: 37415384
- Yang B, Zhu Y, Zheng X, et al. Vitamin D Supplementation during Intensive Care Unit Stay Is Associated with Improved Outcomes in Critically Ill Patients with Sepsis: A Cohort Study. Nutrients. 2023 Jun 28;15(13):2924. https://doi.org/10.3390/nu15132924. PMID: 37447250
- Yazdi ZS, Streeten EA, Whitlatch HB, et al. Vitamin D deficiency increases vulnerability to canagliflozin-induced adverse effects on 1,25-dihydroxyvitamin D and PTH. medRxiv. 2023 May 11:2023.05.11.23289854. https://doi.org/10.1101/2023.05.11.23289854. Preprint. PMID: 37214882
- Zhang Q, Zhang Z, He X, et al. Vitamin D levels and the risk of overactive bladder: a systematic review and meta-analysis. Nutr Rev. 2023 May 17:nuad049. https://doi.org/10.1093/nutrit/nuad049. Online ahead of print. PMID: 37195440
- Zhao X, Yang X, Bao Y, et al. Construction of vitamin D delivery system based on pine nut oil Pickering emulsion: effect of phenols. J Sci Food Agric. 2023 Jun;103(8):4034-4046. https://doi.org/10.1002/jsfa.12363. Epub 2023 Mar 21. PMID: 36453713
- Zheng S, Zhu Z, Ding C. How can we design a proper trial for vitamin D treatment of diseases? Facts and numbers. J Cachexia Sarcopenia Muscle. 2023 Jun;14(3):1146-1149. https://doi.org/10.1002/jcsm.13200. Epub 2023 Apr 18. PMID: 37073430
- Zittermann A, Trummer C, Theiler-Schwetz V, et al. Long-term supplementation with 3200 to 4000 IU of vitamin D daily and adverse events: a systematic review and meta-analysis of randomized controlled trials. Eur J Nutr. 2023 Jun;62(4):1833-1844. https://doi.org/10.1007/s00394-023-03124-w. Epub 2023 Feb 28. PMID:

NEFROLOGIA

- Ahmad S, Ullah H, Khan MI, et al. Effect of Vitamin D Supplementation on the Hemoglobin Level in Chronic Kidney Disease Patients on Hemodialysis: A Systematic Review and Meta-Analysis. Cureus. 2023 Jun 23;15(6):e40843. https://doi.org/10.7759/cureus.40843. eCollection 2023 Jun. PMID: 37489201
- Arroyo E, Leber CA, Burney HN, et al. Epimeric vitamin D and cardiovascular structure and function in advanced CKD and after kidney transplantation. Nephrol Dial Transplant. 2023 Jul 19:gfad168. https://doi.org/10.1093/ndt/gfad168. Online ahead of print. PMID: 37468453
- Bai YJ, Li YM, Hu SM, et al. Vitamin D supplementation reduced blood inflammatory cytokines expression and improved graft function in kidney transplant recipients. Front Immunol. 2023 Jul 6;14:1152295. https://doi.org/10.3389/fimmu.2023.1152295. eCollection 2023. PMID: 37483634
- Caus M, Alonso-Montes C, Fernandez-Martin JL, et al. Vitamin D Receptor From VSMCs Regulates Vascular Calcification During CKD: A Potential Role for miR-145a. Arterioscler Thromb Vasc Biol. 2023 Aug;43(8):1533-1548. https://doi.org/10.1161/ATVBAHA.122.318834. Epub 2023 Jun 29. PMID: 37381989
- Chen H, Song N, Li AM, et al. Association of vitamin D metabolites with arteriovenous fistula function in hemodialysis patients: A single center study. Hemodial Int. 2023 Jul;27(3):231-240. https://doi.org/10.1111/hdi.13080. Epub 2023 Apr 3. PMID: 37010240
- Christodoulou M, Aspray TJ, Piec I, et al. Early renal impairment affects hormonal regulators of calcium and bone metabolism and Wnt signalling and the response to vitamin D supplementation in healthy older adults. J Steroid Biochem Mol Biol. 2023 May;229:106267. https://doi.org/10.1016/j.jsbmb.2023.106267. Epub 2023 Feb 3. PMID: 36739953
- de Oliveira E Silva Ullmann T, Ramalho BJ, Laurindo LF, et al. Effects of Vitamin D Supplementation in Diabetic Kidney Disease: An Systematic Review. J Ren Nutr. 2023 Jun 9:S1051-2276(23)00095-X. https://doi.org/10.1053/j.jrn.2023.05.006. Online ahead of print. PMID: 37302723 Review.
- Dialameh H, Nikoobakht M, Menbari Oskouie I, et al. Assessment of the relationship between vitamin D with semen analysis parameters and reproductive hormones levels before and after kidney transplantation: An Iranian randomized and double-blinded study. Urologia. 2023 May;90(2):272-277. https://doi.org/10.1177/03915603231162394. Epub 2023 Apr 3. PMID: 37006175
- He M, Yang T, Zhou P, et al. A Mendelian randomization study on causal effects of 25(OH) vitamin D levels on diabetic nephropathy. BMC Nephrol. 2023 Jun 27;24(1):192. https://doi.org/10.1186/s12882-023-03186-2. PMID: 37369991

- Heister DJ, Bohnert BN, Heyne N, et al. Two cases of severe vitamin D3 intoxication treated with therapeutic plasma exchange and high cut-off hemodialysis. J Nephrol. 2023 Jun;36(5):1461-1467. https://doi.org/10.1007/s40620-022-01543-2. Epub 2022 Dec 22. PMID: 36547775

- Hsu S, Zelnick LR, Bansal N, et al. Vitamin D Metabolites and Risk of Cardiovascular Disease in Chronic Kidney Disease: The CRIC Study. J Am Heart Assoc. 2023 Jul 18;12(14):e028561. https://doi.org/10.1161/JAHA.122.028561. Epub 2023 Jul 8. PMID: 37421259

- Mason N, Sweet LM, Wills Z, et al. Vitamin D Abuse in Pursuit of "Gains" Resulting in Acute Kidney Injury. Mil Med. 2023 Jul 4:usad237. https://doi.org/10.1093/milmed/usad237. Online ahead of print. PMID: 37402617

- Obaid AA, Almasmoum H, Almaimani RA, et al. Vitamin D and calcium co-therapy mitigates pre-established cadmium nephropathy by regulating renal calcium homeostatic molecules and improving anti-oxidative and anti-inflammatory activities in rat. J Trace Elem Med Biol. 2023 Sep;79:127221. https://doi.org/10.1016/j.jtemb.2023.127221. Epub 2023 May 24. PMID: 37244046

- Pilkey NG, Novosel O, Roy A, et al. Does Native Vitamin D Supplementation Have Pleiotropic Effects in Patients with End-Stage Kidney Disease? A Systematic Review of Randomized Trials. Nutrients. 2023 Jul 7;15(13):3072. https://doi.org/10.3390/nu15133072. PMID: 37447398

- Sardari Masihi L, Borumandnia N, Taheri M, et al. Effect of two vitamin D repletion protocols on 24-h urine calcium in patients with recurrent calcium kidney stones and vitamin D deficiency: a randomized clinical trial. Eur J Med Res. 2023 Jul 22;28(1):246. https://doi.org/10.1186/s40001-023-01226-z. PMID: 37481570

- Shahidi S, Mortazavi M, Bakhtiari MB, et al. Nutritional vitamin D supplementation in chronic hemodialysis: An uncontrolled open-label trial. J Educ Health Promot. 2023 Jun 30;12:214. https://doi.org/10.4103/jehp.jehp_1507_22. eCollection 2023. PMID: 37546001

- Souza CS, Deluque AL, Oliveira BM, et al. Vitamin D deficiency contributes to the diabetic kidney disease progression via increase ZEB1/ZEB2 expressions. Nutr Diabetes. 2023 Jul 1;13(1):9. https://doi.org/10.1038/s41387-023-00238-2. PMID: 37391399

- Strugnell SA, Csomor P, Ashfaq A, et al. Evaluation of Therapies for Secondary Hyperparathyroidism Associated with Vitamin D Insufficiency in Chronic Kidney Disease. Kidney Dis (Basel). 2023 Feb 10;9(3):206-217. https://doi.org/10.1159/000529523. eCollection 2023 May. PMID: 37497207

- Tang S, Wu X, Dai Q, et al. Vitamin D receptor attenuate ischemia-reperfusion kidney injury via inhibiting ATF4. Cell Death Discov. 2023 May 12;9(1):158. https://doi.org/10.1038/s41420-023-01456-4. PMID: 37173347

- Teumer A, Rebholz CM. A Step Toward Disentangling the Complex Relationship Between Vitamin D and Kidney Function. J Clin Endocrinol Metab. 2023 Jul 14;108(8):e640-e641. https://doi.org/10.1210/clinem/dgad050. PMID: 36715302

- Wu W, Li X, Di J, et al. Dietary inflammatory index is associated with Vitamin D in CKD patients. Int Urol Nephrol. 2023 Jun 28. https://doi.org/10.1007/s11255-023-03679-x. Online ahead of print. PMID: 37378851

- Yang TA, Chen JY, Lin CA, et al. Sex differences in the association between vitamin D and early-stage chronic kidney disease: A population-based study. Nutr Res. 2023 May 20;117:48-55. https://doi.org/10.1016/j.nutres.2023.05.004. Online ahead of print. PMID: 37473660

- Yeung WG, Palmer SC, Strippoli GFM, et al. Vitamin D Therapy in Adults With CKD: A Systematic Review and Meta-analysis. Am J Kidney Dis. 2023 Jun 24:S0272-6386(23)00693-5. https://doi.org/10.1053/j.ajkd.2023.04.003. Online ahead of print. PMID: 37356648

- Zhang YH, Xu X, Pi HC, et al. Oral vitamin D supplementation on the prevention of peritoneal dialysis-related peritonitis: A pilot randomised controlled trial. Perit Dial Int. 2023 Jul 5:8968608231182885. https://doi.org/10.1177/08968608231182885. Online ahead of print. PMID: 37408329

- Zhao L, Zhu G, Wu L, et al. Effects of vitamin D on inflammatory state in patients with chronic kidney disease: A controversial issue. Ther Apher Dial. 2023 Jun;27(3):383-393. https://doi.org/10.1111/1744-9987.13949. Epub 2022 Nov 15. PMID: 36345919

NEUROLOGIA

- Al-Shammri S, Chattopadhyay A, Hanah MG, et al. Association of Blood Levels of Vitamin D and Its Binding Protein with Clinical Phenotypes of Multiple Sclerosis. Biomedicines. 2023 Jun 24;11(7):1808. https://doi.org/10.3390/biomedicines11071808. PMID: 37509448

- Anwar MJ, Alenezi SK, Alhowail AH. Molecular insights into the pathogenic impact of vitamin D deficiency in neurological disorders. Biomed Pharmacother. 2023 Jun;162:114718. https://doi.org/10.1016/j.biopha.2023.114718. Epub 2023 Apr 20. PMID: 37084561

- Barmaki O, Mansour A, Moodi M, et al. Serum Vitamin D Status and Cognitive Function in Iranian Older Adults: Evidence from the Birjand Longitudinal Aging Study. J Nutr. 2023 Aug;153(8):2312-2319. https://doi.org/10.1016/j.tjnut.2023.06.033. Epub 2023 Jun 24. PMID: 37356498

- Borowicz W, Ptaszkowski K, Ptaszkowska L, et al. Association Between Serum Vitamin D Levels and Physical Outcomes of Patients Who Underwent Rehabilitation Following Ischemic Stroke. Med Sci Monit. 2023 May 30;29:e940115. https://doi.org/10.12659/MSM.940115. PMID: 37248685

- Bray NW, Pieruccini-Faria F, Witt ST, et al. Combining exercise with cognitive training and vitamin D3 to improve functional brain connectivity (FBC) in older adults with mild cognitive impairment (MCI). Results from the SYNERGIC trial. Geroscience. 2023 Jun;45(3):1967-1985. https://doi.org/10.1007/s11357-023-00805-6. Epub 2023 May 10. PMID: 37162700

- Bytowska ZK, Korewo-Labelle D, Berezka P, et al. Effect of 12-Week BMI-Based Vitamin D3 Supplementation in Parkinson's Disease with Deep Brain Stimulation on Physical Performance, Inflammation, and Vitamin D Metabolites. Int J Mol Sci. 2023 Jun 15;24(12):10200. https://doi.org/10.3390/ijms241210200. PMID: 37373347

- Cassard SD, Fitzgerald KC, Qian P, et al. High-dose vitamin D3 supplementation in relapsing-remitting multiple sclerosis: a ran-

domised clinical trial. EClinicalMedicine. 2023 Apr 13;59:101957. https://doi.org/10.1016/j.eclinm.2023.101957. eCollection 2023 May. PMID: 37125397

- Chen WY, Cheng YC, Chiu CC, et al. Effects of Vitamin D Supplementation on Cognitive Outcomes: A Systematic Review and Meta-Analysis. Neuropsychol Rev. 2023 Jul 7. https://doi.org/10.1007/s11065-023-09598-z. Online ahead of print. PMID: 37418225 Review.
- Dai M, Song Q, Wang X, et al. Combined associations of vitamin D and cognitive function with all-cause mortality among older adults in Chinese longevity areas: A prospective cohort study. Front Public Health. 2023 May 2;11:1024341. https://doi.org/10.3389/fpubh.2023.1024341. eCollection 2023. PMID: 37206876
- Dai Y, Wu F, Ni S, et al. Vitamin D receptor gene polymorphisms are associated with the risk and features of myasthenia gravis in the Han Chinese population. Immunol Res. 2023 Jun;71(3):404-412. https://doi.org/10.1007/s12026-022-09349-x. Epub 2023 Jan 7. PMID: 36609978
- Daly T. Amyloid-β, vitamin D: why we should triangulate conclusions about therapeutic targets in Alzheimer's disease. Neurol Sci. 2023 Sep;44(9):3321-3322. https://doi.org/10.1007/s10072-023-06840-7. Epub 2023 May 5. PMID: 37145228
- Essa SA, Elokda A, Mosaad D, et al. Efficacy of ultraviolet B radiation versus vitamin D3 on postural control and cognitive functions in relapsing-remitting multiple sclerosis: A randomized controlled study. J Bodyw Mov Ther. 2023 Jul;35:49-56. https://doi.org/10.1016/j.jbmt.2023.04.069. Epub 2023 Apr 17. PMID: 37330802
- Evlice A, Sanli ZS, Boz PB. The importance of Vitamin-D and Neutrophil-Lymphocyte Ratio for Alzheimer's Disease. Pak J Med Sci. 2023 May-Jun;39(3):799-803. https://doi.org/10.12669/pjms.39.3.7024. PMID: 37250565
- Fan Y, Huang H, Chen X, et al. Causal effect of vitamin D on myasthenia gravis: a two-sample Mendelian randomization study. Front Nutr. 2023 Jul 19;10:1171830. https://doi.org/10.3389/fnut.2023.1171830. eCollection 2023. PMID: 37538922
- Favarin JC, Basotti A, Baptistella AR, et al. Neuroprotective Effect of Vitamin D on Behavioral and Oxidative Parameters of Male and Female Adult Wistar Rats Exposed to Mancozeb (manganese/zinc ethylene bis-dithiocarbamate). Mol Neurobiol. 2023 Jul;60(7):3724-3740. https://doi.org/10.1007/s12035-023-03298-8. Epub 2023 Mar 20. PMID: 36940076
- Feng J, Wang Q, Zhang Y. Ideal vitamin D and handgrip strength counteracts the risk effect of APOE genotype on dementia: a population-based longitudinal study. J Transl Med. 2023 May 29;21(1):355. https://doi.org/10.1186/s12967-023-04195-3. PMID: 37246226
- Fleet JL, McIntyre A, Janzen S, et al. A systematic review examining the effect of vitamin D supplementation on functional outcomes post-stroke. Clin Rehabil. 2023 May 11:2692155231174599. https://doi.org/10.1177/02692155231174599. Online ahead of print. PMID: 37166229
- Haindl MT, Üçal M, Wonisch W, et al. Vitamin D-An Effective Antioxidant in an Animal Model of Progressive Multiple Sclerosis. Nutrients. 2023 Jul 26;15(15):3309. https://doi.org/10.3390/nu15153309. PMID: 37571246
- Hajeer S, Nasr F, Nabha S, et al. Association between vitamin D deficiency and multiple sclerosis- MRI significance: A scoping review. Heliyon. 2023 Apr 23;9(5):e15754. https://doi.org/10.1016/j.heliyon.2023.e15754. eCollection 2023 May. PMID: 37180903
- Harse JD, Marriott RJ, Zhu K, et al. Vitamin D status and cognitive performance in community-dwelling adults: A dose-response meta-analysis of observational studies. Front Neuroendocrinol. 2023 Jul;70:101080. https://doi.org/10.1016/j.yfrne.2023.101080. Epub 2023 Jun 1. PMID: 37268277
- Inose H, Takahashi T, Matsukura Y, et al. Effect of vitamin D deficiency on surgical outcomes of degenerative cervical myelopathy. N Am Spine Soc J. 2023 Jun 28;15:100239. https://doi.org/10.1016/j.xnsj.2023.100239. eCollection 2023 Sep. PMID: 37457393
- López-Muñoz P, Torres-Costoso AI, Fernández-Rodríguez R, et al. Effect of Vitamin D Supplementation on Fatigue in Multiple Sclerosis: A Systematic Review and Meta-Analysis. Nutrients. 2023 Jun 24;15(13):2861. https://doi.org/10.3390/nu15132861. PMID: 37447189
- Mancera Alzate JM, Rodriguez Vélez LM. [Vitamin D deficiency in patients with epilepsy: consideration to take into account]. Nutr Hosp. 2023 Jun 21. https://doi.org/10.20960/nh.04737. Online ahead of print. PMID: 37409727
- Mirarchi A, Albi E, Beccari T, et al. Microglia and Brain Disorders: The Role of Vitamin D and Its Receptor. Int J Mol Sci. 2023 Jul 25;24(15):11892. https://doi.org/10.3390/ijms241511892. PMID: 37569267
- Montero-Odasso M, Zou G, Speechley M, et al. Effects of Exercise Alone or Combined With Cognitive Training and Vitamin D Supplementation to Improve Cognition in Adults With Mild Cognitive Impairment: A Randomized Clinical Trial. JAMA Netw Open. 2023 Jul 3;6(7):e2324465. https://doi.org/10.1001/jamanetworkopen.2023.24465. PMID: 37471089
- Pal R, Choudhury S, Kumar H, et al. Vitamin D deficiency and genetic polymorphisms of vitamin D-associated genes in Parkinson's disease. Eur J Neurosci. 2023 Jul 24. https://doi.org/10.1111/ejn.16098. Online ahead of print. PMID: 37485791
- Pham H, Waterhouse M, Rahman S, et al. Vitamin D supplementation and cognition-Results from analyses of the D-Health trial. J Am Geriatr Soc. 2023 Jun;71(6):1773-1784. https://doi.org/10.1111/jgs.18247. Epub 2023 Jan 30. PMID: 36715270
- Plantone D, Pardini M, Caneva S, et al. Is There a Role of Vitamin D in Alzheimer's disease? CNS Neurol Disord Drug Targets. 2023 May 26. https://doi.org/10.2174/1871527322666230526164421. Online ahead of print. PMID: 37246320
- Qiao J, Ma H, Chen M, et al. Vitamin D alleviates neuronal injury in cerebral ischemia-reperfusion via enhancing the Nrf2/HO-1 antioxidant pathway to counteract NLRP3-mediated pyroptosis. J Neuropathol Exp Neurol. 2023 Jul 20;82(8):722-733. https://doi.org/10.1093/jnen/nlad047. PMID: 37403613
- Sangha A, Quon M, Pfeffer G, et al. The Role of Vitamin D in Neuroprotection in Multiple Sclerosis: An Update. Nutrients. 2023 Jun 30;15(13):2978. https://doi.org/10.3390/nu15132978. PMID: 37447304
- Shea MK, Barger K, Dawson-Hughes B, et al. Brain vitamin D forms, cognitive decline,

and neuropathology in community-dwelling older adults. Alzheimers Dement. 2023 Jun;19(6):2389-2396. https://doi.org/10.1002/alz.12836. Epub 2022 Dec 7. PMID: 36479814

- Turkmen BO, Can B, Buker S, et al. The effect of vitamin D on neurocognitive functions in older vitamin D deficient adults: a pilot longitudinal interventional study. Psychogeriatrics. 2023 Jun 30. https://doi.org/10.1111/psyg.12997. Online ahead of print. PMID: 37391231

- Ye X, Zhou Q, Ren P, et al. The Synaptic and Circuit Functions of Vitamin D in Neurodevelopment Disorders. Neuropsychiatr Dis Treat. 2023 Jul 3;19:1515-1530. https://doi.org/10.2147/NDT.S407731. eCollection 2023. PMID: 37424961

- Zhao MY, Dahlen A, Ramirez NJ, et al. Effect of vitamin D supplementation on cerebral blood flow in male patients with adrenoleukodystrophy. J Neurosci Res. 2023 Jul;101(7):1086-1097. https://doi.org/10.1002/jnr.25187. Epub 2023 Mar 26. PMID: 36967233

ONCOLOGIA

- Ahn JH, Choi H, Kim SJ, et al. The association between vitamin D supplementation and the long-term prognosis of differentiated thyroid cancer patients: a retrospective observational cohort study with propensity score matching. Front Endocrinol (Lausanne). 2023 Jun 13;14:1163671. https://doi.org/10.3389/fendo.2023.1163671. eCollection 2023. PMID: 37383396

- Arayici ME, Basbinar Y, Ellidokuz H. Vitamin D Intake, Serum 25-Hydroxyvitamin-D (25(OH)D) Levels, and Cancer Risk: A Comprehensive Meta-Meta-Analysis Including Meta-Analyses of Randomized Controlled Trials and Observational Epidemiological Studies. Nutrients. 2023 Jun 12;15(12):2722. https://doi.org/10.3390/nu15122722. PMID: 37375626

- Avila E, Noriega-Mejía BJ, González-Macías J, et al. The Preventive Role of the Vitamin D Endocrine System in Cervical Cancer. Int J Mol Sci. 2023 May 12;24(10):8665. https://doi.org/10.3390/ijms24108665. PMID: 37240017

- Bingol Ozakpinar O, Dastan H, et al. Carbon Nanofiber-Sodium Alginate Composite Aerogels Loaded with Vitamin D: The Cytotoxic and Apoptotic Effects on Colon Cancer Cells. Gels. 2023 Jul 10;9(7):561. https://doi.org/10.3390/gels9070561. PMID: 37504440

- Boot IWA, Wesselius A, Yu EYW, et al. Dietary vitamin D intake and the bladder cancer risk: A pooled analysis of prospective cohort studies. Clin Nutr. 2023 Aug;42(8):1462-1474. https://doi.org/10.1016/j.clnu.2023.05.010. Epub 2023 May 22. PMID: 37321901

- Capobianco E, McGaughey V, Seraphin G, et al. Vitamin D inhibits osteosarcoma by reprogramming nonsense-mediated RNA decay and SNAI2-mediated epithelial-to-mesenchymal transition. Front Oncol. 2023 May 9;13:1188641. https://doi.org/10.3389/fonc.2023.1188641. eCollection 2023. PMID: 37228489

- Chakraborty M, Arora M, Ramteke A, et al. FokI polymorphism of Vitamin D receptor gene and deficiency of serum Vitamin D increases the risk of breast cancer in North Indian women. Endocrine. 2023 Jul;81(1):168-174. https://doi.org/10.1007/s12020-023-03334-6. Epub 2023 Mar 1. PMID: 36854857

- Chen B, Diallo MT, Ma Y, et al. The association of vitamin D and digestive system cancers: a comprehensive Mendelian randomization study. J Cancer Res Clin Oncol. 2023 Jul 21. https://doi.org/10.1007/s00432-023-05140-z. Online ahead of print. PMID: 37479757

- Chen S, Li S, Li H, et al. Effect of polycyclic aromatic hydrocarbons on cancer risk causally mediated via vitamin D levels. Environ Toxicol. 2023 Sep;38(9):2111-2120. https://doi.org/10.1002/tox.23835. Epub 2023 May 20. PMID: 37209380

- de Oliveira CS, Baptistella MM, Siqueira AP, et al. Combination of vitamin D and probiotics inhibits chemically induced colorectal carcinogenesis in Wistar rats. Life Sci. 2023 Jun 1;322:121617. https://doi.org/10.1016/j.lfs.2023.121617. Epub 2023 Mar 30. PMID: 37003542

- Dennis C, Dillon J, Cohen DJ, et al. Local production of active vitamin D3 metabolites in breast cancer cells by CYP24A1 and CYP27B1. J Steroid Biochem Mol Biol. 2023 May 25;232:106331. https://doi.org/10.1016/j.jsbmb.2023.106331. Online ahead of print. PMID: 37244301

- Galus Ł, Michalak M, Lorenz M, et al. Vitamin D supplementation increases objective response rate and prolongs progression-free time in patients with advanced melanoma undergoing anti-PD-1 therapy. Cancer. 2023 Jul 1;129(13):2047-2055. https://doi.org/10.1002/cncr.34718. Epub 2023 Apr 24. PMID: 37089083

- Gharagozloo M, Jahanian Sadatmahalleh S, Kalhor M, et al. Evaluation of the relationship between vitamin D levels with oocyte quality in breast cancer women: a cross-sectional study. Sci Rep. 2023 Jul 26;13(1):12083. https://doi.org/10.1038/s41598-023-39341-w. PMID: 37495647

- Gibbs DC, Thomas NE, Kanetsky PA, et al. Association of functional, inherited vitamin D-binding protein variants with melanoma-specific death. JNCI Cancer Spectr. 2023 Jul 26:pkad051. https://doi.org/10.1093/jncics/pkad051. Online ahead of print. PMID: 37494457

- Grant WB. Comments on "Association of calcium and vitamin D supplementation with cancer incidence and cause-specific mortality in Black women: Extended follow-up of the Women's Health Initiative calcium-vitamin D trial". Int J Cancer. 2023 Jul 15;153(2):450-451. https://doi.org/10.1002/ijc.34502. Epub 2023 Mar 17. PMID: 36897021

- Guyonnet E, Kim SJ, Pullella K, et al. Vitamin D and Calcium Supplement Use and High-Risk Breast Cancer: A Case-Control Study among BRCA1 and BRCA2 Mutation Carriers. Cancers (Basel). 2023 May 17;15(10):2790. https://doi.org/10.3390/cancers15102790. PMID: 37345127

- Gwenzi T, Schrotz-King P, Schöttker B, et al. Vitamin D Status, Cdx2 Genotype, and Colorectal Cancer Survival: Population-Based Patient Cohort. Nutrients. 2023 Jun 12;15(12):2717. https://doi.org/10.3390/nu15122717. PMID: 37375621

- Gwenzi T, Zhu A, Schrotz-King P, et al. Effects of vitamin D supplementation on inflammatory response in patients with cancer and precancerous lesions: Systematic review and meta-analysis of randomized trials. Clin Nutr. 2023 Jul;42(7):1142-1150. https://doi.org/10.1016/j.clnu.2023.05.009. Epub 2023 May 17. PMID: 37244755

- Hung M, Almpani K, Thao B, et al. Vita-

min D in the Prevention and Treatment of Oral Cancer: A Scoping Review. Nutrients. 2023 May 17;15(10):2346. https://doi.org/10.3390/nu15102346. PMID: 37242229

- Iqbal MUN, Maqbool SA, Khan TA. Associations of vitamin D receptor encoding gene variants with premenopausal breast cancer risk. Am J Hum Biol. 2023 Jun;35(6):e23865. https://doi.org/10.1002/ajhb.23865. Epub 2023 Jan 16. PMID: 36645723

- Jung S, Jin S, Je Y. Vitamin D Intake, Blood 25-Hydroxyvitamin D, and Risk of Ovarian Cancer: A Meta-Analysis of Observational Studies. J Womens Health (Larchmt). 2023 May;32(5):561-573. https://doi.org/10.1089/jwh.2022.0432. Epub 2023 Mar 16. PMID: 36930144

- Kamiya S, Nakamori Y, Takasawa A, et al. Suppression of the vitamin D metabolizing enzyme CYP24A1 provides increased sensitivity to chemotherapeutic drugs in breast cancer. Oncol Rep. 2023 May;49(5):85. https://doi.org/10.3892/or.2023.8522. Epub 2023 Mar 17. PMID: 36928289

- Kamiya S, Nakamori Y, Takasawa A, et al. Vitamin D metabolism in cancer: potential feasibility of vitamin D metabolism blocking therapy. Med Mol Morphol. 2023 Jun;56(2):85-93. https://doi.org/10.1007/s00795-023-00348-x. Epub 2023 Feb 7. PMID: 36749415 Review

- Kato I, Larson JC. Reply to: Comments on "Association of calcium and vitamin D supplementation with cancer incidence and cause-specific mortality in Black women: Extended follow-up of the Women's Health Initiative calcium-vitamin D trial". Int J Cancer. 2023 Jul 15;153(2):452-453. https://doi.org/10.1002/ijc.34501. Epub 2023 Mar 17. PMID: 36897025

- Khazan N, Quarato ER, Singh NA, et al. Vitamin D Receptor Antagonist MeTC7 Inhibits PD-L1. Cancers (Basel). 2023 Jun 30;15(13):3432. https://doi.org/10.3390/cancers15133432. PMID: 37444542

- Kim H, Yuan C, Nguyen LH, et al. Prediagnostic Vitamin D Status and Colorectal Cancer Survival by Vitamin D Binding Protein Isoforms in US Cohorts. J Clin Endocrinol Metab. 2023 May 17;108(6):e223-e229. https://doi.org/10.1210/clinem/dgac742. PMID: 36550068

- Kuznia S, Zhu A, Akutsu T, et al. Efficacy of vitamin D3 supplementation on cancer mortality: Systematic review and individual patient data meta-analysis of randomised controlled trials. Ageing Res Rev. 2023 Jun;87:101923. https://doi.org/10.1016/j.arr.2023.101923. Epub 2023 Mar 31. PMID: 37004841

- Li J, Qin S, Zhang S, et al. Serum vitamin D concentration, vitamin D-related polymorphisms, and colorectal cancer risk. Int J Cancer. 2023 Jul 15;153(2):278-289. https://doi.org/10.1002/ijc.34521. Epub 2023 Mar 29. PMID: 36946647

- Li Q, Chan H, Liu WX, et al. Carnobacterium maltaromaticum boosts intestinal vitamin D production to suppress colorectal cancer in female mice. Cancer Cell. 2023 Jul 14:S1535-6108(23)00236-2. https://doi.org/10.1016/j.ccell.2023.06.011. Online ahead of print. PMID: 37478851

- Malekzadeh A, Kharrati-Kopaei M. Simultaneous confidence intervals for quantile differences of several heterogeneous normal populations: With application to vitamin D supplement treatment on colorectal cancer patients. Biom J. 2023 Jun;65(5):e2200083. https://doi.org/10.1002/bimj.202200083. Epub 2023 Mar 17. PMID: 36928645

- Manocha A, Brockton NT, Cook L, et al. Low Serum Vitamin D Associated With Increased Tumor Size and Higher Grade in Premenopausal Canadian Women With Breast Cancer. Clin Breast Cancer. 2023 Aug;23(6):e368-e376. https://doi.org/10.1016/j.clbc.2023.06.003. Epub 2023 Jun 14. PMID: 37357130

- Martin-Moreno JM, Martin-Gorgojo A. "The Role of Vitamin D in Cancer Prevention": Some New Clues on a Fascinating Subject. Nutrients. 2023 May 30;15(11):2560. https://doi.org/10.3390/nu15112560. PMID: 37299523

- Mohamed RF, Barakat DBS, Eid S, et al. Low baseline vitamin D levels increase the risk of bone metastases among females with breast cancer - Hospital based cohort study. Cancer Epidemiol. 2023 Aug;85:102374. https://doi.org/10.1016/j.canep.2023.102374. Epub 2023 May 4. PMID: 37148827

- Ottaiano A, Facchini S, Santorsola M, et al. Circulating Vitamin D Level and Its Impact on Mortality and Recurrence in Stage III Colorectal Cancer Patients: A Systematic Review and Meta-Analysis. Cancers (Basel). 2023 May 31;15(11):3012. https://doi.org/10.3390/cancers15113012. PMID: 37296974

- Seraphin G, Rieger S, Hewison M, et al. The impact of vitamin D on cancer: A mini review. J Steroid Biochem Mol Biol. 2023 Jul;231:106308. https://doi.org/10.1016/j.jsbmb.2023.106308. Epub 2023 Apr 11. PMID: 37054849

- Serrano D, Bellerba F, Johansson H, et al. Vitamin D Supplementation and Adherence to World Cancer Research Fund (WCRF) Diet Recommendations for Colorectal Cancer Prevention: A Nested Prospective Cohort Study of a Phase II Randomized Trial. Biomedicines. 2023 Jun 20;11(6):1766. https://doi.org/10.3390/biomedicines11061766. PMID: 37371861

- Sha S, Chen LJ, Brenner H, et al. Associations of 25-hydroxyvitamin D status and vitamin D supplementation use with mortality due to 18 frequent cancer types in the UK Biobank cohort. Eur J Cancer. 2023 Jul 17;191:113241. https://doi.org/10.1016/j.ejca.2023.113241. Online ahead of print. PMID: 37549530

- Shabanian S, Rozbeh A, Mohammadi B, et al. The association between Vitamin D deficiency and fibrocystic breast disorder. Curr Mol Med. 2023 Jun 23. https://doi.org/10.2174/1566524023666230623155659. Online ahead of print. PMID: 37357512

- Shahmohammadi M, Hajimohammadebrahim-Ketabforoush M, Shariatpanahi ZV. Optimal vitamin D status at admission appears to improve survival after craniotomy in patients with brain malignancies. Clin Nutr ESPEN. 2023 Jun;55:428-433. https://doi.org/10.1016/j.clnesp.2023.04.009. Epub 2023 Apr 15. PMID: 37202079

- Shellenberger RA, Gowda S, Kurn H, et al. Vitamin D insufficiency and serum levels related to the incidence and stage of cutaneous melanoma: a systematic review and meta-analysis. Melanoma Res. 2023 Aug 1;33(4):265-274. https://doi.org/10.1097/CMR.0000000000000897. Epub 2023 May 18. PMID: 37199748

- Starska-Kowarska K. Role of Vitamin D in Head and Neck Cancer-Immune Function, Anti-Tumour Effect, and Its Impact on Patient Prognosis. Nutrients. 2023 May 31;15(11):2592. https://doi.

org/10.3390/nu15112592. PMID: 37299554

- Sutandyo N, Cintakaweni DMW, Setiawan L, et al. Association of Body Composition and Handgrip Strength with Interleukin-6 (IL-6) and Vitamin D Level in Cancer Patients. Int J Gen Med. 2023 May 23;16:1995-2001. https://doi.org/10.2147/IJGM.S388457. eCollection 2023. PMID: 37251283
- Törzsök P, Van Goubergen J, Pichler M, et al. Isochromosome 12p Formation Regulates Vitamin D Metabolism in Testicular Cancer. Nutrients. 2023 May 19;15(10):2384. https://doi.org/10.3390/nu15102384. PMID: 37242266
- Tuttis K, Machado ART, Santos PWDS, et al. Sulforaphane Combined with Vitamin D Induces Cytotoxicity Mediated by Oxidative Stress, DNA Damage, Autophagy, and JNK/MAPK Pathway Modulation in Human Prostate Tumor Cells. Nutrients. 2023 Jun 14;15(12):2742. https://doi.org/10.3390/nu15122742. PMID: 37375646
- Wei D, Wang L, Liu Y, et al. Activation of Vitamin D/VDR Signaling Reverses Gemcitabine Resistance of Pancreatic Cancer Cells Through Inhibition of MUC1 Expression. Dig Dis Sci. 2023 Jul;68(7):3043-3058. https://doi.org/10.1007/s10620-023-07931-3. Epub 2023 Apr 18. PMID: 37071246
- You W, Liu X, Tang H, et al. Vitamin D Status Is Associated With Immune Checkpoint Inhibitor Efficacy and Immune-related Adverse Event Severity in Lung Cancer Patients: A Prospective Cohort Study. J Immunother. 2023 Jul-Aug 01;46(6):236-243. https://doi.org/10.1097/CJI.0000000000000469. Epub 2023 May 16. PMID: 37184520
- Zhao X, Wang J, Zou L. Vitamin D and gastric cancer - A systematic review and meta-analysis. Nutr Hosp. 2023 Jun 13. https://doi.org/10.20960/nh.04410. Online ahead of print. PMID: 37334809

PEDIATRIA

- [No authors listed] Correction to "High-Dose Vitamin D Intervention in Infants-Effects on Vitamin D Status, Calcium Homeostasis, and Bone Strength". J Clin Endocrinol Metab. 2023 Jun 12:dgad323. https://doi.org/10.1210/clinem/dgad323. Online ahead of print. PMID: 37303283
- Abu-Elnasr Awwad A, Hasan RA, Hablas MGA, et al. Impact of vitamin D in children with chronic tonsillitis (immunohistochemical study of CD68 polarisation and proinflammatory cytokines estimation). Sci Rep. 2023 May 17;13(1):8014. https://doi.org/10.1038/s41598-023-33970-x. PMID: 37198277
- Ageeru K, Mendu SB, Avinash S, et al. Serum Vitamin D Levels in Pediatric Tuberculosis Patients in a Tertiary Care Center in India: A Case-Control Study. Cureus. 2023 Jun 4;15(6):e39937. https://doi.org/10.7759/cureus.39937. eCollection 2023 Jun. PMID: 37409212
- Al-Qudah SA, Abu-Hussein LAA, Al Sbaihi S. Maternal Awareness of Vitamin D Deficiency in Infants and Children Up to the Age of 6 Years: A Cross-sectional Study in Jordan. Clin Pediatr (Phila). 2023 May 19:99228231175228. https://doi.org/10.1177/00099228231175228. Online ahead of print. PMID: 37204118
- Amberntsson A, Bärebring L, Winkvist A, et al. Maternal vitamin D status and risk of childhood overweight at 5 years of age in two Nordic cohort studies. Front Nutr. 2023 Jul 26;10:1201171. https://doi.org/10.3389/fnut.2023.1201171. eCollection 2023. PMID: 37565036
- And Alternative Medicine EC. Retracted: Effects of Routine Health Care Combined with Oral Vitamin D on Linear Growth in 5-Year-Old Children. Evid Based Complement Alternat Med. 2023 Jun 21;2023:9896851. https://doi.org/10.1155/2023/9896851. eCollection 2023. PMID: 37387883
- And Alternative Medicine EC. Retracted: Intensive Health Care plus Vitamin D Administration Benefits the Growth and Development of Young Children and Reduces the Incidence of Nutritional Disorders. Evid Based Complement Alternat Med. 2023 Jun 21;2023:9851602. https://doi.org/10.1155/2023/9851602. eCollection 2023. PMID: 37387825
- Aslan E, Sert A, Buyukinan M, et al. Left and right ventricular function by echocardiography, tissue doppler imaging, carotid intima media thickness, and asymmetric dimethylarginine levels in female adolescents with vitamin D deficiency. Cardiol Young. 2023 May 25:1-8. https://doi.org/10.1017/S1047951123001257. Online ahead of print. PMID: 37226488
- Buendía JA, Patino DG, Lindarte EF. Effectiveness of high-dose vitamin D supplementation to reduce the incidence rate of repeat episodes of pneumonia in children: A systematic review. Pediatr Pulmonol. 2023 Jul 5. https://doi.org/10.1002/ppul.26585. Online ahead of print. PMID: 37403822
- Cabalín C, Pérez-Mateluna G, Iturriaga C, et al. Oral vitamin D modulates the epidermal expression of the vitamin D receptor and cathelicidin in children with atopic dermatitis. Arch Dermatol Res. 2023 May;315(4):761-770. https://doi.org/10.1007/s00403-022-02416-1. Epub 2022 Oct 22. PMID: 36273083
- Calcaterra V, Magenes VC, Tagi VM, et al. Association between Vitamin D Levels, Puberty Timing, and Age at Menarche. Children (Basel). 2023 Jul 19;10(7):1243. https://doi.org/10.3390/children10071243. PMID: 37508740
- Caliskan M, Dabak M, Tumer KC. The relationship between serum cytokine profile and vitamin D in calves with neonatal diarrhea. Cytokine. 2023 May;165:156173. https://doi.org/10.1016/j.cyto.2023.156173. Epub 2023 Mar 16. PMID: 36933398
- Cantio E, Bilenberg N, Nørgaard SM, et al. Vitamin D status in pregnancy and childhood associates with intelligence quotient at age 7 years: An Odense child cohort study. Aust N Z J Psychiatry. 2023 Jul;57(7):1062-1072. https://doi.org/10.1177/00048674221116027. Epub 2022 Aug 15. PMID: 35971641
- Carboo JA, Dolman-Macleod RC, Malan L, et al. High-dose oral vitamin D supplementation for prevention of infections in children aged 0 to 59 months: a systematic review and meta-analysis. Nutr Rev. 2023 Jul 10:nuad082. https://doi.org/10.1093/nutrit/nuad082. Online ahead of print. PMID: 37428896
- Chongthavornvasana S, Lertudomphonwanit C, Mahachoklertwattana P, et al. Determination of Optimal Vitamin D Dosage in Children with Cholestasis. BMC Pediatr. 2023 Jun 21;23(1):313. https://doi.org/10.1186/s12887-023-04113-y. PMID: 37344793
- Coccia F, Pietrobelli A, Zoller T, et al. Vitamin D and Osteogenesis Imperfecta in Pediatrics. Pharmaceuticals (Basel). 2023 May 3;16(5):690. https://doi.org/10.3390/ph16050690. PMID: 37242473

- Corsello A, Macchi M, D'Oria V, et al. Effects of vitamin D supplementation in obese and overweight children and adolescents: A systematic review and meta-analysis. Pharmacol Res. 2023 Jun;192:106793. https://doi.org/10.1016/j.phrs.2023.106793. Epub 2023 May 11. PMID: 37178775
- D Al-Mendalawi M. Comment On: Serum Vitamin D Levels in Children and Adolescents with Vasovagal Syncope, Syncope due to Orthostatic Hypotension, and Cardiac Syncope. Turk Arch Pediatr. 2023 Jul;58(4):454-455. https://doi.org/10.5152/TurkArchPediatr.2023.23037. PMID: 37317578
- De Marzio M, Lasky-Su J, Chu SH, et al. The metabolic role of vitamin D in children's neurodevelopment: a network study. bioRxiv. 2023 Jul 15:2023.06.23.546277. https://doi.org/10.1101/2023.06.23.546277. Preprint. PMID: 37425858
- Deruyter S, Van Biervliet S, De Guchtenaere A. Response to vitamin D replacement therapy in obese children and adolescents with vitamin D deficiency: a randomized controlled trial. J Pediatr Endocrinol Metab. 2023 Mar 13;36(5):458-465. https://doi.org/10.1515/jpem-2022-0598. Print 2023 May 25. PMID: 36913250
- Doumat G, Mehta GD, Mansbach JM, et al. Association between Early Childhood Vitamin D Status and Age 6-Year Lung Function among Children with a History of Severe Bronchiolitis in Infancy. Nutrients. 2023 May 19;15(10):2379. https://doi.org/10.3390/nu15102379. PMID: 37242262
- El Shiekh MA, Hanafy RMH. Relationship between vitamin D status and caries experience in a group of Egyptian children: a cross-sectional study. BMC Oral Health. 2023 Jun 9;23(1):374. https://doi.org/10.1186/s12903-023-03065-0. PMID: 37296472
- Fang Q, Wu Y, Lu J, et al. A meta-analysis of the association between vitamin D supplementation and the risk of acute respiratory tract infection in the healthy pediatric group. Front Nutr. 2023 Jun 20;10:1188958. https://doi.org/10.3389/fnut.2023.1188958. eCollection 2023. PMID: 37408991
- Fayoumi T, Gari A, Alarawi M, et al. A Retrospective Study on Vitamin D Status and Its Association With Cardiometabolic Risk Factors Among Children With Chronic Kidney Disease at King Abdulaziz University Hospital. Cureus. 2023 May 22;15(5):e39340. https://doi.org/10.7759/cureus.39340. eCollection 2023 May. PMID: 37351236
- Filiou A, Hoyer A, Holmdahl I, et al. Vitamin D receptor genetic variant associated with asthma in Swedish school-children. Clin Exp Allergy. 2023 May 29. https://doi.org/10.1111/cea.14349. Online ahead of print. PMID: 37246605
- Fisher M, Marro L, Arbuckle TE, et al. Association between toxic metals, vitamin D and preterm birth in the Maternal-Infant research on environmental chemicals study. Paediatr Perinat Epidemiol. 2023 Jul;37(5):447-457. https://doi.org/10.1111/ppe.12962. Epub 2023 Mar 2. PMID: 36864001
- Flores-Aldana M, Rivera-Pasquel M, García-Guerra A, et al. Effect of Vitamin D Supplementation on (25(OH)D) Status in Children 12-30 Months of Age: A Randomized Clinical Trial. Nutrients. 2023 Jun 15;15(12):2756. https://doi.org/10.3390/nu15122756. PMID: 37375660
- Fu L, Wong BYL, Li Z, et al. Genetic variants in the vitamin D pathway and their association with vitamin D metabolite levels: Detailed studies of an inner-city pediatric population suggest a modest but significant effect in early childhood. J Steroid Biochem Mol Biol. 2023 Jul 23;233:106369. https://doi.org/10.1016/j.jsbmb.2023.106369. Online ahead of print. PMID: 37490983
- Gaml-Sørensen A, Brix N, Ernst A, et al. The estimated effect of season and vitamin D in the first trimester on pubertal timing in girls and boys: a cohort study and an instrumental variable analysis. Int J Epidemiol. 2023 May 13:dyad060. https://doi.org/10.1093/ije/dyad060. Online ahead of print. PMID: 37178177
- Gan Y, You S, Ying J, et al. The Association between Serum Vitamin D Levels and Urinary Tract Infection Risk in Children: A Systematic Review and Meta-Analysis. Nutrients. 2023 Jun 9;15(12):2690. https://doi.org/10.3390/nu15122690. PMID: 37375601
- Ganmaa D, Khudyakov P, Buyanjargal U, et al. Influence of vitamin D supplementation on fracture risk, bone mineral density and bone biochemistry in Mongolian schoolchildren: multicenter double-blind randomized placebo-controlled trial. medRxiv. 2023 May 19:2023.05.18.23290181. https://doi.org/10.1101/2023.05.18.23290181. Preprint. PMID: 37292864
- Gora A, Singh P, Debnath E, et al. Daily vs. monthly oral vitamin D3 for treatment of symptomatic vitamin D deficiency in infants: a randomized controlled trial. J Pediatr Endocrinol Metab. 2023 May 18;36(7):683-691. https://doi.org/10.1515/jpem-2023-0146. Print 2023 Jul 26. PMID: 37192500
- Gülşen M, Özçay F, Barış Z, et al. Evaluation of Vitamin D Levels in Children With Liver Transplant. Exp Clin Transplant. 2023 Jul 12. https://doi.org/10.6002/ect.2023.0075. Online ahead of print. PMID: 37486032
- Jamali Z, Ghorbani F, Shafie'ei M, et al. Risk factors associated with vitamin D deficiency in preterm neonates: a single-center step-wise regression analysis. BMC Pediatr. 2023 Jun 26;23(1):324. https://doi.org/10.1186/s12887-023-04088-w. PMID: 37365549
- Joshi M, Uday S. Vitamin D Deficiency in Chronic Childhood Disorders: Importance of Screening and Prevention. Nutrients. 2023 Jun 19;15(12):2805. https://doi.org/10.3390/nu15122805. PMID: 37375708
- Karagol C, Duyan Camurdan A. Evaluation of vitamin D levels and affecting factors of vitamin D deficiency in healthy children 0-18 years old. Eur J Pediatr. 2023 Jul 10. https://doi.org/10.1007/s00431-023-05096-9. Online ahead of print. PMID: 37428244
- Karkenny AJ, Avarello J, Hanstein R, et al. Pediatric Fractures: Does Vitamin D Play a Role? J Pediatr Orthop. 2023 Sep 1;43(8):492-497. https://doi.org/10.1097/BPO.0000000000002462. Epub 2023 Jun 28. PMID: 37390504
- Kharal N, Kadel A, Sapkota S, et al. An interesting case of unintentional vitamin D toxicity in an infant due to erroneous supplement concentration: a case report. Ann Med Surg (Lond). 2023 Apr 6;85(5):1971-1974. https://doi.org/10.1097/MS9.0000000000000528. eCollection 2023 May. PMID: 37228984 Free PMC article.
- Koca Yozgat A, Azak E, Kaçar D, et al.

The Effects of Vitamin D on Myocardial Function Demonstrated by Speckle-Tracking Echocardiography in Children with Beta Thalassemia. Turk Kardiyol Dern Ars. 2023 Jul;51(5):328-332. https://doi.org/10.5543/tkda.2023.85265. PMID: 37450454

- Kocaay F, Bilen A, Asik A, et al. Changes in choroidal tissue post-supplementation with vitamin D in pediatric patients who are deficient in vitamin D. Int Ophthalmol. 2023 Jul 3. https://doi.org/10.1007/s10792-023-02787-y. Online ahead of print. PMID: 37395907
- Kojima R, Shinohara R, Kushima M, et al. Effect of birth season on allergic rhinitis and cedar pollinosis considering allergen and vitamin D exposure: The Japan Environment and Children's study (JECS). Allergol Int. 2023 Jul;72(3):411-417. https://doi.org/10.1016/j.alit.2023.01.003. Epub 2023 Jan 30. PMID: 36725444
- Korkut O, Aydin H. Neurological Symptoms That May Represent a Warning in Terms of Diagnosis and Treatment in a Group of Children and Adolescents with Vitamin D Deficiency. Children (Basel). 2023 Jul 20;10(7):1251. https://doi.org/10.3390/children10071251. PMID: 37508748
- Kumar S, Randhawa MS, Angurana SK, et al. Clinical Profile, Intensive Care Needs and Outcome of Children with Dilated Cardiomyopathy Associated with Vitamin D Deficiency: A 5-year PICU Experience. Indian J Crit Care Med. 2023 Jul;27(7):510-514. https://doi.org/10.5005/jp-journals-10071-24484. PMID: 37502290
- Latoch E, Kozłowski K, Konończuk K, et al. Vitamin D Deficiency and Carotid Media-Intima Thickness in Childhood Cancer Survivors. Nutrients. 2023 May 16;15(10):2333. https://doi.org/10.3390/nu15102333. PMID: 37242216
- Levita J, Wilar G, Wahyuni I, et al. Clinical Toxicology of Vitamin D in Pediatrics: A Review and Case Reports. Toxics. 2023 Jul 24;11(7):642. https://doi.org/10.3390/toxics11070642. PMID: 37505607
- Lindqvist PG, Gissler M, Essén B. Is there a relation between stillbirth and low levels of vitamin D in the population? A bi-national follow-up study of vitamin D fortification. BMC Pregnancy Childbirth. 2023 May 17;23(1):359. https://doi.org/10.1186/s12884-023-05673-8. PMID: 37198534
- Loddo F, Nauleau S, Lapalus D, et al. Association of Maternal Gestational Vitamin D Supplementation with Respiratory Health of Young Children. Nutrients. 2023 May 19;15(10):2380. https://doi.org/10.3390/nu15102380. PMID: 37242263
- Loni R, Zameer S, Hasan FA, et al. Vitamin-D Status and Clinical Outcomes in Critically Ill Children. Indian J Crit Care Med. 2023 Jul;27(7):503-509. https://doi.org/10.5005/jp-journals-10071-24486. PMID: 37502287
- Mabrouk RE, Hussein DT, Abbas MEER, et al. Sufficient vitamin D is favorable for children with persistent and chronic immune thrombocytopenia. Ann Hematol. 2023 Aug;102(8):2033-2038. https://doi.org/10.1007/s00277-023-05210-9. Epub 2023 May 5. PMID: 37145323
- Majeed M, Siddiqui M, Lessan N. Vitamin D deficiency increases with age and adiposity in Emirati children and adolescents irrespective of type 1 diabetes mellitus: a case control study. BMC Endocr Disord. 2023 Jul 14;23(1):150. https://doi.org/10.1186/s12902-023-01405-3. PMID: 37452421
- Markers D. Retracted: Effect of Vitamin D Combined with Recombinant Human Growth Hormone in Children with Growth Hormone Deficiency. Dis Markers. 2023 Jul 19;2023:9821580. https://doi.org/10.1155/2023/9821580. eCollection 2023. PMID: 37502569
- Matejek T, Zapletalova B, Stepan M, et al. Dynamics of the vitamin D C3-epimer levels in preterm infants. Clin Chem Lab Med. 2023 Jan 23;61(6):1084-1094. https://doi.org/10.1515/cclm-2022-1128. Print 2023 May 25. PMID: 36660856
- Melough MM, Li M, Hamra G, et al. Greater Gestational Vitamin D Status is Associated with Reduced Childhood Behavioral Problems in the Environmental Influences on Child Health Outcomes Program. J Nutr. 2023 May;153(5):1502-1511. https://doi.org/10.1016/j.tjnut.2023.03.005. Epub 2023 Apr 4. PMID: 37147034
- Middelkoop K, Stewart J, Walker N, et al. Vitamin D supplementation to prevent tuberculosis infection in South African schoolchildren: multicenter phase 3 double-blind randomized placebo-controlled trial (ViDiKids). Int J Infect Dis. 2023 Sep;134:63-70. https://doi.org/10.1016/j.ijid.2023.05.010. Epub 2023 May 20. PMID: 37211272
- Miller JJ, Augustin R, Sepiashvili L, et al. Analytical Unreliability of 25 Hydroxy Vitamin D Measurements in Pre-Term Neonates. J Appl Lab Med. 2023 Jul 20:jfad033. https://doi.org/10.1093/jalm/jfad033. Online ahead of print. PMID: 37473432
- Mirhosseini H, Maayeshi N, Hooshmandi H, et al. The effect of vitamin D supplementation on the brain mapping and behavioral performance of children with ADHD: a double-blinded randomized controlled trials. Nutr Neurosci. 2023 Jul 25:1-11. https://doi.org/10.1080/1028415X.2023.2233752. Online ahead of print. PMID: 37489917
- Mishra S, Mishra D, Mahajan B, et al. Effect of Daily Vitamin D Supplementation on Serum Vitamin D Levels in Children with Epilepsy Receiving Sodium Valproate Monotherapy: A Randomized, Controlled Trial. Indian J Pediatr. 2023 May;90(5):450-456. https://doi.org/10.1007/s12098-022-04225-w. Epub 2022 Jun 28. PMID: 35763213
- Moon RJ, Green HD, D'Angelo S, et al. The effect of pregnancy vitamin D supplementation on offspring bone mineral density in childhood: a systematic review and meta-analysis. Osteoporos Int. 2023 Jul;34(7):1269-1279. https://doi.org/10.1007/s00198-023-06751-5. Epub 2023 Apr 27. PMID: 37103591
- Muzzammil M, Minhas MS, Mughal A, et al. Prevalence of inadequate vitamin D level and its predictors in children presenting with torus fractures. Eur J Orthop Surg Traumatol. 2023 Jul;33(5):1767-1772. https://doi.org/10.1007/s00590-022-03354-4. Epub 2022 Aug 10. PMID: 35947197
- Nematollahi P, Arabi S, Mansourian M, et al. Potential role of serum vitamin D as a risk factor in pediatric acute lymphoblastic leukemia. Pediatr Hematol Oncol. 2023 Jul 21:1-11. https://doi.org/10.1080/08880018.2023.2202687. Online ahead of print. PMID: 37477214
- Panfili FM, Convertino A, Grugni G, et al. Multicentric Italian case-control study on 25OH vitamin D levels in children and adolescents with Prader-Willi syndrome. J Endo-

crinol Invest. 2023 Jul;46(7):1397-1406. https://doi.org/10.1007/s40618-022-01990-5. Epub 2023 Jan 28. PMID: 36708456

- Petrarca C, Viola D. Vitamin D Role in Childhood Mite Allergy and Allergen Immunotherapy (AIT). Biomedicines. 2023 Jun 13;11(6):1700. https://doi.org/10.3390/biomedicines11061700. PMID: 37371795

- Pourrostami K, Heshmat R, Derakhshanian H, et al. The association between vitamin D status and sleep duration in school-aged children; the CASPIAN-V study. J Diabetes Metab Disord. 2022 Nov 17;22(1):341-346. https://doi.org/10.1007/s40200-022-01146-5. eCollection 2023 Jun. PMID: 37255800

- Pruneti C, Guidotti S. Need for Multidimensional and Multidisciplinary Management of Depressed Preadolescents and Adolescents: A Review of Randomized Controlled Trials on Oral Supplementations (Omega-3, Fish Oil, Vitamin D3). Nutrients. 2023 May 15;15(10):2306. https://doi.org/10.3390/nu15102306. PMID: 37242190

- Rached V, Diogenes MEL, Donangelo CM, et al. Calcium plus vitamin D supplementation during pregnancy reduces postpartum fat mass in adolescents: A randomized trial. Am J Hum Biol. 2023 May 11:e23911. https://doi.org/10.1002/ajhb.23911. Online ahead of print. PMID: 37166151

- Ragunathan K, Chakrabarty B. Vitamin D Supplementation in Children on Antiseizure Medications: High Time to Have Proper Guidelines. Indian J Pediatr. 2023 May;90(5):431-432. https://doi.org/10.1007/s12098-023-04480-5. Epub 2023 Feb 22. PMID: 36811775

- Sangüesa J, Sunyer J, Garcia-Esteban R, et al. Prenatal and child vitamin D levels and allergy and asthma in childhood. Pediatr Res. 2023 May;93(6):1745-1751. https://doi.org/10.1038/s41390-022-02256-9. Epub 2022 Sep 3. PMID: 36057646

- Soltani S, Beigrezaei S, Abdollahi S, et al. Oral vitamin D supplementation and body weight in children and adolescents: a systematic review and meta-analysis of randomized controlled trials. Eur J Pediatr. 2023 May;182(5):1977-1989. https://doi.org/10.1007/s00431-023-04889-2. Epub 2023 Mar 1. PMID: 36856888

- Sudjaritruk T, Kanjanavanit S, Chaito T, et al. A Three-Year Follow-Up of Bone Density Among Thai Adolescents With Perinatally Acquired HIV After Completion of Vitamin D and Calcium Supplementation. J Adolesc Health. 2023 Aug;73(2):262-270. https://doi.org/10.1016/j.jadohealth.2023.03.012. Epub 2023 Jun 7. PMID: 37294251

- Sung M. Trends of vitamin D in asthma in the pediatric population for two decades: a systematic review. Clin Exp Pediatr. 2023 Aug;66(8):339-347. https://doi.org/10.3345/cep.2022.01109. Epub 2023 Jun 14. PMID: 37321572

- Surucu Kara I, Mertoglu C, Siranli G, et al. The Relationship Between Vitamin-D Deficiency and Protein Oxidation Among Obese Children. Fetal Pediatr Pathol. 2023 Aug;42(4):599-613. https://doi.org/10.1080/15513815.2023.2183026. Epub 2023 May 8. PMID: 37154302

- Tabassum A, Ali A, Zahedi FD, et al. Immunomodulatory Role of Vitamin D on Gut Microbiome in Children. Biomedicines. 2023 May 14;11(5):1441. https://doi.org/10.3390/biomedicines11051441. PMID: 37239112

- Takahashi K, Arimitsu T, Hara-Isono K, et al. Seasonal variation in vitamin D status of Japanese infants starts to emerge at 2 months of age: a retrospective cohort study. Br J Nutr. 2023 Jun 14;129(11):1908-1915. https://doi.org/10.1017/S0007114522002744. Epub 2022 Aug 26. PMID: 36017869

- Tang WQ, Ma N, Meng LY, et al. Vitamin D supplementation improved physical growth and neurologic development of Preterm Infants receiving Nesting Care in the neonatal Intensive Care Unit. BMC Pediatr. 2023 May 20;23(1):248. https://doi.org/10.1186/s12887-023-04075-1. PMID: 37210477

- Tsotra K, Garoufi A, Kossiva L, et al. The impact of vitamin D supplementation on serum cathelicidin levels and the clinical course of atopic dermatitis in children. Minerva Pediatr (Torino). 2023 Jun;75(3):395-399. https://doi.org/10.23736/S2724-5276.17.04910-6. Epub 2017 Jun 22. PMID: 28643993

- Tugrul B, Demirdag HG, Hanli Sahin A. Vitamin D Levels in Children During Winter and the Relationship Between Sunscreen and Sun Protection Behaviors. Dermatol Pract Concept. 2023 Jul 1;13(3):e2023190. https://doi.org/10.5826/dpc.1303a190. PMID: 37557131

- Twanabasu S, Ghimire J, Homagain S, et al. Vitamin D supplementation leading to hypervitaminosis D in a breastfed infant: A case report. Clin Case Rep. 2023 Jul 5;11(7):e7635. https://doi.org/10.1002/ccr3.7635. eCollection 2023 Jul. PMID: 37415587

- van der Velde LA, Beth SA, Voortman T, et al. Anti-tissue transglutaminase antibodies (TG2A) positivity and the risk of vitamin D deficiency among children - a cross-sectional study in the generation R cohort. BMC Pediatr. 2023 Jun 7;23(1):286. https://doi.org/10.1186/s12887-023-04041-x. PMID: 37286940

- von Hurst P, Mazahery H, Reynolds E, et al. Knowledge, attitudes and behaviours towards vitamin D and sun exposure of parents of infants and young children and health professionals in New Zealand. Nutr Health. 2023 Jul 2:2601060231185190. https://doi.org/10.1177/02601060231185190. Online ahead of print. PMID: 37394875

- Weiler HA, Fu WH, Razaghi M, et al. Parathyroid hormone-vitamin D dynamics vary according to the definition of vitamin D deficiency in newborn infants. Bone. 2023 Jul 30;175:116862. https://doi.org/10.1016/j.bone.2023.116862. Online ahead of print. PMID: 37524294

- Wolters M, Marron M, Foraita R, et al. Longitudinal associations between vitamin D status and cardiometabolic risk markers among children and adolescents. J Clin Endocrinol Metab. 2023 Jun 1:dgad310. https://doi.org/10.1210/clinem/dgad310. Online ahead of print. PMID: 37261399

- Wu C, Zhang X, Yan F, et al. Does vitamin D have a potential role in precocious puberty? A meta-analysis. Food Funct. 2023 Jun 6;14(11):5301-5310. https://doi.org/10.1039/d3fo00665d. PMID: 37203349

- Wu Y, Wang F, Li A, et al. Vitamin D status among infants and children in Shanghai, China: A hospital-based study. Food Sci Nutr. 2023 Mar 8;11(6):3111-3120. https://doi.org/10.1002/fsn3.3292. eCollection 2023 Jun. PMID: 37324927

- Xiaoxia L, Jilong J, Xianrui C, et al. Vitamin D status and tic disorder: a systematic review and meta-analysis of observational studies. Front Pediatr. 2023 May 30;11:1173741. https://doi.org/10.3389/fped.2023.1173741. eCollection 2023. PMID: 37325365

- Zeng R, Li Y, Shen S, et al. Is antenatal or early-life vitamin D associated with eczema or food allergy in childhood? A systematic review. Clin Exp Allergy. 2023 May;53(5):511-525. https://doi.org/10.1111/cea.14281. Epub 2023 Jan 17. PMID: 36648071

- Zhang M, Wu Y, Lu Z, et al. Effects of Vitamin D Supplementation on Children with Autism Spectrum Disorder: A Systematic Review and Meta-analysis. Clin Psychopharmacol Neurosci. 2023 May 30;21(2):240-251. https://doi.org/10.9758/cpn.2023.21.2.240. PMID: 37119216

- Zhou W, Wang P, Bai Y, et al. Vitamin D metabolic pathway genes polymorphisms and vitamin D levels in association with neonatal hyperbilirubinemia in China: a single-center retrospective cohort study. BMC Pediatr. 2023 May 31;23(1):275. https://doi.org/10.1186/s12887-023-04086-y. PMID: 37259065

- Ziyab AH, Al-Taiar A, Al-Sabah R, et al. Sex and obesity status modify the association between vitamin D and eczema among adolescents. Pediatr Res. 2023 May 12. https://doi.org/10.1038/s41390-023-02641-y. Online ahead of print. PMID: 37173405

- Zurynski Y, Munns CF, Sezgin G, et al. Vitamin D testing in children and adolescents in Victoria, Australia: are testing practices in line with global recommendations? Arch Dis Child. 2023 May 17:archdischild-2022-325000. https://doi.org/10.1136/archdischild-2022-325000. Online ahead of print. PMID: 37197895

PNEUMOLOGIA

- Antonio Buendía J, Rodriguez-Martinez CE, Sossa-Briceño MP. Cost utility of vitamin D supplementation in adults with mild to moderate asthma. J Asthma. 2023 May;60(5):951-959. https://doi.org/10.1080/02770903.2022.2110113. Epub 2022 Sep 14. PMID: 35920247

- Bastyte D, Tamasauskiene L, Golubickaite I, et al. Vitamin D receptor and vitamin D binding protein gene polymorphisms in patients with asthma: a pilot study. BMC Pulm Med. 2023 Jul 5;23(1):245. https://doi.org/10.1186/s12890-023-02531-3. PMID: 37407930

- Bergagnini-Kolev MC, Hsu S, Aitken ML, et al. Metabolism and pharmacokinetics of vitamin D in patients with cystic fibrosis. J Steroid Biochem Mol Biol. 2023 May 20;232:106332. https://doi.org/10.1016/j.jsbmb.2023.106332. Online ahead of print. PMID: 37217104

- Chang Q, Zhu Y, Zhou G, et al. Vitamin D status, sleep patterns, genetic susceptibility, and the risk of incident adult-onset asthma: a large prospective cohort study. Front Nutr. 2023 Jun 30;10:1222499. https://doi.org/10.3389/fnut.2023.1222499. eCollection 2023. PMID: 37457981

- de Menezes Júnior LAA, Fajardo VC, de Freitas SN, et al. Rotating shift workers with vitamin D deficiency have a higher risk of obstructive sleep apnea. Sleep Breath. 2023 May;27(2):727-735. https://doi.org/10.1007/s11325-022-02603-4. Epub 2022 Mar 26. PMID: 35347657

- Georgoulis M, Kontogianni MD, Kechribari I, et al. Associations between serum vitamin D status and the cardiometabolic profile of patients with obstructive sleep apnea. Hormones (Athens). 2023 Jun 15. https://doi.org/10.1007/s42000-023-00456-4. Online ahead of print. PMID: 37322405

- Gwadera Ł, Białas AJ, Kumor-Kisielewska A, et al. Calcium, Phosphate, and Vitamin D Status in Patients with Sarcoidosis-Associations with Disease Activity and Symptoms. J Clin Med. 2023 Jul 18;12(14):4745. https://doi.org/10.3390/jcm12144745. PMID: 37510860

- Hernández-Colín DD, Bedolla-Barajas M, Morales-Romero J, et al. Serum Vitamin D Is Inversely Associated with Blood Eosinophil Count Among Adults with Allergic Asthma. Thorac Res Pract. 2023 Jul;24(4):208-213. https://doi.org/10.5152/ThoracResPract.2023.22154. PMID: 37485710

- Liao S, Huang Y, Zhang J, et al. Vitamin D promotes epithelial tissue repair and host defense responses against influenza H1N1 virus and Staphylococcus aureus infections. Respir Res. 2023 Jul 5;24(1):175. https://doi.org/10.1186/s12931-023-02477-4. PMID: 37407993

- Moideen K, Nathella PK, Madabushi S, et al. Plasma Vitamin D levels in correlation with circulatory proteins could be a potential biomarker tool for pulmonary tuberculosis and treatment monitoring. Cytokine. 2023 Aug;168:156238. https://doi.org/10.1016/j.cyto.2023.156238. Epub 2023 Jun 3. PMID: 37276815

- Perryman AN, Kim HH, Payton A, et al. Plasma sterols and vitamin D are correlates and predictors of ozone-induced inflammation in the lung: A pilot study. PLoS One. 2023 May 15;18(5):e0285721. https://doi.org/10.1371/journal.pone.0285721. eCollection 2023. PMID: 37186612

- Salameh L, Mahmood W, Hamoudi R, et al. The Role of Vitamin D Supplementation on Airway Remodeling in Asthma: A Systematic Review. Nutrients. 2023 May 26;15(11):2477. https://doi.org/10.3390/nu15112477. PMID: 37299440

- Valle MS, Russo C, Casabona A, et al. Anti-inflammatory role of vitamin D in muscle dysfunctions of patients with chronic obstructive pulmonary disease: a comprehensive review. Minerva Med. 2023 Jun;114(3):357-371. https://doi.org/10.23736/S0026-4806.22.07879-X. Epub 2022 Mar 25. PMID: 35332756

- Wang M, Zhang Q, Xu G, et al. [Association between vitamin D level and blood eosinophil count in healthy population and patients with chronic obstructive pulmonary disease]. Nan Fang Yi Ke Da Xue Xue Bao. 2023 May 20;43(5):727-732. https://doi.org/10.12122/j.issn.1673-4254.2023.05.07. PMID: 37313813

- Wu M, Bhimavarapu A, Alvarez JA, et al. Changes in bone turnover after high-dose vitamin D supplementation during acute pulmonary exacerbation in cystic fibrosis. Bone. 2023 Sep;174:116835. https://doi.org/10.1016/j.bone.2023.116835. Epub 2023 Jun 28. PMID: 37390941

- Zhu Z, Wan X, Liu J, et al. Vitamin D status and chronic obstructive pulmonary disease risk: a prospective UK Biobank study. BMJ Open Respir Res. 2023 Jun;10(1):e001684. https://doi.org/10.1136/bmjresp-2023-001684. PMID: 37353234

PSICHIATRIA

- Alipouri M, Amiri E, Hoseini R, et al. Effects of eight weeks of aerobic exercise and vitamin D supplementation on psychi-

atric comorbidities in men with migraine and vitamin D insufficiency: A randomized controlled clinical trial. J Affect Disord. 2023 Aug 1;334:12-20. https://doi.org/10.1016/j.jad.2023.04.108. Epub 2023 May 3. PMID: 37146906

- Almuqbil M, Almadani ME, Albraiki SA, et al. Impact of Vitamin D Deficiency on Mental Health in University Students: A Cross-Sectional Study. Healthcare (Basel). 2023 Jul 23;11(14):2097. https://doi.org/10.3390/healthcare11142097. PMID: 37510537

- Fraenkel E, Orlický M, Fedičová M, et al. Concomitant occurrence of Wernicke's encephalopathy and sarcopenia due to vitamin D depletion in patients with alcohol use disorder: a case report. J Int Med Res. 2023 Jun;51(6):3000605231182262. https://doi.org/10.1177/03000605231182262. PMID: 37340718

- Jaholkowski P, Hindley GFL, Shadrin AA, et al. Genome-wide Association Analysis of Schizophrenia and Vitamin D Levels Shows Shared Genetic Architecture and Identifies Novel Risk Loci. Schizophr Bull. 2023 May 10:sbad063. https://doi.org/10.1093/schbul/sbad063. Online ahead of print. PMID: 37163672

- Jasemi SV, Zandieh Z, Zandieh N, et al. Is vitamin D supplementation program in Iranian schools effective in reducing adolescent depressive symptoms? Cost effectiveness study. BMC Public Health. 2023 Jul 20;23(1):1393. https://doi.org/10.1186/s12889-023-16244-z. PMID: 37474906

- Lu ZL, Lu K. Comment on "Fine particulate matter, vitamin D, physical activity, and major depressive disorder in elderly adults: Results from UK Biobank". J Affect Disord. 2023 Oct 15;339:998-999. https://doi.org/10.1016/j.jad.2023.05.034. Epub 2023 May 16. PMID: 37201897

- Ma J, Li K. Negative Association between Serum Vitamin D Levels and Depression in a Young Adult US Population: A Cross-Sectional Study of NHANES 2007-2018. Nutrients. 2023 Jun 29;15(13):2947. https://doi.org/10.3390/nu15132947. PMID: 37447273

- Martín-González C, Fernández-Alonso P, Pérez-Hernández O, et al. Sarcopenic Obesity in People with Alcoholic Use Disorder: Relation with Inflammation, Vascular Risk Factors and Serum Vitamin D Levels. Int J Mol Sci. 2023 Jun 9;24(12):9976. https://doi.org/10.3390/ijms24129976. PMID: 37373124

- Mo H, Zhang J, Huo C, et al. The association of vitamin D deficiency, age and depression in US adults: a cross-sectional analysis. BMC Psychiatry. 2023 Jul 24;23(1):534. https://doi.org/10.1186/s12888-023-04685-0. PMID: 37488550

- Park Y, Ah YM, Yu YM. Vitamin D supplementation for depression in older adults: a meta-analysis of randomized controlled trials. Front Nutr. 2023 Jun 21;10:1169436. https://doi.org/10.3389/fnut.2023.1169436. eCollection 2023. PMID: 37415914

- Sun D, Song M, Zeng C, et al. Associations of vitamin D-related single nucleotide polymorphisms with post-stroke depression among ischemic stroke population. Front Psychiatry. 2023 Jun 2;14:1148047. https://doi.org/10.3389/fpsyt.2023.1148047. eCollection 2023. PMID: 37404714

- Tamang MK, Ali A, Pertile RN, et al. Developmental vitamin D-deficiency produces autism-relevant behaviours and gut-health associated alterations in a rat model. Transl Psychiatry. 2023 Jun 14;13(1):204. https://doi.org/10.1038/s41398-023-02513-3. PMID: 37316481

- Trovato B, Godos J, Varrasi S, et al. Physical Activity, Sun Exposure, Vitamin D Intake and Perceived Stress in Italian Adults. Nutrients. 2023 May 13;15(10):2301. https://doi.org/10.3390/nu15102301. PMID: 37242183

- Vyas CM, Mischoulon D, Chang G, et al. Effects of Vitamin D3 and Marine Omega-3 Fatty Acids Supplementation on Indicated and Selective Prevention of Depression in Older Adults: Results From the Clinical Center Sub-Cohort of the VITamin D and OmegA-3 TriaL (VITAL). J Clin Psychiatry. 2023 Jun 26;84(4):22m14629. https://doi.org/10.4088/JCP.22m14629. PMID: 37378490

- Wu M, Xie J, Zhou Z, et al. Response to the comment on "Fine particulate matter, vitamin D, physical activity, and major depressive disorder in elderly adults: Results from UK Biobank". J Affect Disord. 2023 Oct 1;338:422. https://doi.org/10.1016/j.jad.2023.06.049. Epub 2023 Jun 24. PMID: 37364656

REUMATOLOGIA

- [No authors listed] Vitamin D supplementation and fracture risk in healthy adults. Drug Ther Bull. 2023 Jul;61(7):101. https://doi.org/10.1136/dtb.2023.000028. Epub 2023 Jun 9. PMID: 37295925

- Agostini D, Donati Zeppa S. Vitamin D, Diet and Musculoskeletal Health. Nutrients. 2023 Jun 27;15(13):2902. https://doi.org/10.3390/nu15132902. PMID: 37447228

- Al-Saoodi H, Kolahdooz F, Andersen JR, et al. Effect of vitamin D on inflammatory and clinical outcomes in patients with rheumatoid arthritis: a systematic review and dose-response meta-analysis of randomized controlled trials. Nutr Rev. 2023 Jul 12:nuad083. https://doi.org/10.1093/nutrit/nuad083. Online ahead of print. PMID: 37437898

- And Alternative Medicine EC. Retracted: Correlation Analysis of Adverse Reactions of Antiosteoporosis Drugs by Different Mechanisms with Bone Turnover and Vitamin D. Evid Based Complement Alternat Med. 2023 Jun 21;2023:9817927. https://doi.org/10.1155/2023/9817927. eCollection 2023. PMID: 37387919

- Asgari Savadjani S, Mt Sherwin C, Heidari-Soureshjani S, et al. The role of Vitamin D in carpal tunnel syndrome risk and supplementation outcomes: A systematic review. Curr Rheumatol Rev. 2023 May 5. https://doi.org/10.2174/1573397119666230505101443. Online ahead of print. PMID: 37151171

- Bollen SE, Bass JJ, Wilkinson DJ, et al. The impact of genetic variation within the vitamin D pathway upon skeletal muscle function: A systematic review. J Steroid Biochem Mol Biol. 2023 May;229:106266. https://doi.org/10.1016/j.jsbmb.2023.106266. Epub 2023 Feb 21. PMID: 36822332

- Burt LA, Kaufmann M, Rose MS, et al. Measurements of the Vitamin D Metabolome in the Calgary Vitamin D Study: Relationship of Vitamin D Metabolites to Bone Loss. J Bone Miner Res. 2023 Jul 6. https://doi.org/10.1002/jbmr.4876. Online ahead of print. PMID: 37409797

- Chang K, Albright JA, Quinn M, et al. A Diagnosis of Vitamin D Deficiency Is Associated With Increased Rates of Primary Patellar Instability and Need for Recurrent Surgical

Stabilization. Sports Health. 2023 May 19:19417381231172726. https://doi.org/10.1177/19417381231172726. Online ahead of print. PMID: 37208906

- Chen X, Zhang Q, Song T, et al. Vitamin D deficiency triggers intrinsic apoptosis by impairing SPP1-dependent antiapoptotic signaling in chronic hematogenous osteomyelitis. Gene. 2023 Jun 20;870:147388. https://doi.org/10.1016/j.gene.2023.147388. Epub 2023 Apr 5. PMID: 37024063
- Dal-Bekar NE, İşlekel GH, Köken-Avşar A, et al. Vitamin D attenuates elevated oxidative DNA damage in scleroderma patients with organ involvement: A prospective study. J Steroid Biochem Mol Biol. 2023 May;229:106273. https://doi.org/10.1016/j.jsbmb.2023.106273. Epub 2023 Feb 21. PMID: 36813139
- Divjak A, Jovanovic I, Matic A, et al. The influence of vitamin D supplementation on the expression of mediators of inflammation in knee osteoarthritis. Immunol Res. 2023 Jun;71(3):442-450. https://doi.org/10.1007/s12026-022-09354-0. Epub 2022 Dec 26. PMID: 36571658
- Ekşi MŞ, Orhun Ö, Demir YN, et al. Are serum thyroid hormone, parathormone, calcium, and vitamin D levels associated with lumbar spine degeneration? A cross-sectional observational clinical study. Eur Spine J. 2023 May;32(5):1561-1574. https://doi.org/10.1007/s00586-023-07673-w. Epub 2023 Mar 28. PMID: 36976340
- Erkilic B, Dalgic GS. The preventive role of vitamin D in the prevention and management of Fibromyalgia syndrome. Nutr Health. 2023 Jun;29(2):223-229. https://doi.org/10.1177/02601060221144801. Epub 2023 Jan 2. PMID: 36591895
- García-Vigara A, Monllor-Tormos A, García-Pérez MÁ, et al. Genetic variants of the vitamin D receptor are related to dynapenia in postmenopausal women. Maturitas. 2023 May;171:40-44. https://doi.org/10.1016/j.maturitas.2023.03.002. Epub 2023 Mar 24. PMID: 37001478
- Gnoli M, Brizola E, Tremosini M, et al. Vitamin D and Bone fragility in Individuals with Osteogenesis Imperfecta: A Scoping Review. Int J Mol Sci. 2023 May 28;24(11):9416. https://doi.org/10.3390/ijms24119416. PMID: 37298368
- Houston DK, Marsh AP, Neiberg RH, et al. Corrigendum to 'Vitamin D Supplementation and Muscle Power, Strength and Physical Performance in Older Adults: A Randomized Controlled Trial' [The American Journal of Clinical Nutrition, Volume 117, Issue 6, June 2023, Pages 1086-1095]. Am J Clin Nutr. 2023 Aug;118(2):486. https://doi.org/10.1016/j.ajcnut.2023.06.004. Epub 2023 Jun 15. PMID: 37331702
- Houston DK, Marsh AP, Neiberg RH, et al. Vitamin D Supplementation and Muscle Power, Strength and Physical Performance in Older Adults: A Randomized Controlled Trial. Am J Clin Nutr. 2023 Jun;117(6):1086-1095. https://doi.org/10.1016/j.ajcnut.2023.04.021. Epub 2023 Apr 19. PMID: 37084814
- Im YG, Han MY, Baek HS. Association of Serum Vitamin D Level with Temporomandibular Disorder Incidence: A Retrospective, Multi-Center Cohort Study Using Six Hospital Databases. Nutrients. 2023 Jun 24;15(13):2860. https://doi.org/10.3390/nu15132860. PMID: 37447187
- Jeong C, Ha J, Yoo JI, et al. Effects of Bazedoxifene/Vitamin D Combination Therapy on Serum Vitamin D Levels and Bone Turnover Markers in Postmenopausal Women with Osteopenia: A Randomized Controlled Trial. J Bone Metab. 2023 May;30(2):189-199. https://doi.org/10.11005/jbm.2023.30.2.189. Epub 2023 May 31. PMID: 37449351
- Kettig E, Kistler-Fischbacher M, de Godoi Rezende Costa Molino C, et al. Association of magnesium and vitamin D status with grip strength and fatigue in older adults: a 4-week observational study of geriatric participants undergoing rehabilitation. Aging Clin Exp Res. 2023 Aug;35(8):1619-1629. https://doi.org/10.1007/s40520-023-02450-7. Epub 2023 Jun 7. PMID: 37285075
- Khabbazi A, Mahmoudi M, Esalatmanesh K, et al. Vitamin D Status in Palindromic Rheumatism: A Propensity Score Matching Analysis. Lab Med. 2023 May 19:lmad032. https://doi.org/10.1093/labmed/lmad032. Online ahead of print. PMID: 37204153
- Kim HT, Lee SH, Lee JK, et al. Influence of Vitamin D Deficiency on the Expression of Genes and Proteins in Patients With Medium Rotator Cuff Tears. Am J Sports Med. 2023 Aug;51(10):2650-2658. https://doi.org/10.1177/03635465231184392. Epub 2023 Jul 14. PMID: 37449678
- LeBoff MS, Bischoff-Ferrari HA. The Effects of Vitamin D Supplementation on Musculoskeletal Health: The VITAL and DO-Health Trials. J Gerontol A Biol Sci Med Sci. 2023 Jun 16;78(Supplement_1):73-78. https://doi.org/10.1093/gerona/glad073. PMID: 37325962
- McGuire BD, Dees A, Hao L, et al. A vitamin D deficient diet increases weight gain and compromises bone biomechanical properties without a reduction in BMD in adult female mice. J Steroid Biochem Mol Biol. 2023 Jul;231:106314. https://doi.org/10.1016/j.jsbmb.2023.106314. Epub 2023 Apr 23. PMID: 37088440
- Merle B, Haesebaert J, Viprey M, et al. Chronic pain and vitamin D: A randomized controlled trial in primary care medecine in France, the Dovid study. Int J Rheum Dis. 2023 Jun;26(6):1191-1194. https://doi.org/10.1111/1756-185X.14582. Epub 2023 Feb 3. PMID: 36737404
- Minetama M, Kawakami M, Teraguchi M, et al. Branched-chain amino acids plus vitamin D supplementation promote increased muscle strength following lumbar surgery for lumbar spinal stenosis: a randomized trial. Spine J. 2023 Jul;23(7):962-972. https://doi.org/10.1016/j.spinee.2023.03.007. Epub 2023 Mar 20. PMID: 36940921
- Mirza AA, Rathi H, Dakshinamurthy S, et al. Assessment of Vitamin D Levels and Other Bone Related Biochemical Markers in Healthy Adults in Rural Population of Uttarakhand, India. Indian J Clin Biochem. 2023 Jul;38(3):316-323. https://doi.org/10.1007/s12291-022-01048-6. Epub 2022 May 16. PMID: 37234188
- Mori R, Mae M, Yamanaka H, et al. Locomotor function of skeletal muscle is regulated by vitamin D via adenosine triphosphate metabolism. Nutrition. 2023 Jun 5;115:112117. https://doi.org/10.1016/j.nut.2023.112117. Online ahead of print. PMID: 37531790
- Nakamichi Y, Liu Z, Mori T, et al. The vitamin D receptor in osteoblastic cells but not secreted parathyroid hormone is crucial for soft tissue calcification induced by the proresorptive activity of 1,25(OH)2D3. J Steroid Biochem Mol Biol. 2023 Jun 22;232:106351. https://doi.org/10.1016/j.jsbmb.2023.106351. Online ahead of print. PMID: 37352941

- Nasimi N, Sohrabi Z, Nunes EA, et al. Whey Protein Supplementation with or without Vitamin D on Sarcopenia-Related Measures: A Systematic Review and Meta-Analysis. Adv Nutr. 2023 Jul;14(4):762-773. https://doi.org/10.1016/j.advnut.2023.05.011. Epub 2023 May 15. PMID: 37196876
- Ostermeier T, Faust L, Cavalcanti-Kußmaul A, et al. The influence of vitamin D on handgrip strength in elderly trauma patients. Eur J Med Res. 2023 May 13;28(1):170. https://doi.org/10.1186/s40001-023-01123-5. PMID: 37179360
- Patel D, Roy G, Endres N, et al. Preoperative Vitamin D Supplementation is a Cost-Effective Intervention in Arthroscopic Rotator Cuff Repair. J Shoulder Elbow Surg. 2023 Jun 10:S1058-2746(23)00438-X. https://doi.org/10.1016/j.jse.2023.05.007. Online ahead of print. PMID: 37308074
- Qiu S, Divine G, Rao SD. Effect of vitamin D metabolites on bone histomorphometry in healthy black and white women: An attempt to unravel the so-called vitamin D paradox in blacks. Bone Rep. 2022 Dec 22;18:101650. https://doi.org/10.1016/j.bonr.2022.101650. eCollection 2023 Jun. PMID: 36588780
- Radić M, Đogaš H, Kolak E, et al. Vitamin D in psoriatic arthritis - A systematic review and meta-analysis. Semin Arthritis Rheum. 2023 Jun;60:152200. https://doi.org/10.1016/j.semarthrit.2023.152200. Epub 2023 Apr 1. PMID: 37062151
- Reid IR. Vitamin D and fractures. Lancet Diabetes Endocrinol. 2023 May;11(5):301-302. https://doi.org/10.1016/S2213-8587(23)00087-6. Epub 2023 Mar 31. PMID: 37011648
- Reis AR, Santos RKF, Dos Santos CB, et al. Supplementation of vitamin D isolated or calcium-associated with bone remodeling and fracture risk in postmenopausal women without osteoporosis: A systematic review of randomized clinical trials. Nutrition. 2023 Jul 6;116:112151. https://doi.org/10.1016/j.nut.2023.112151. Online ahead of print. PMID: 37544189
- Ren YQ, Liu JP, Cui Y. [Associations between vitamin D levels and systemic lupus erythematosus risk:a Mendelian randomized study]. Zhonghua Yu Fang Yi Xue Za Zhi. 2023 Jun 6;57(6):891-898. https://doi.org/10.3760/cma.j.cn112150-20220622-00643. PMID: 37357209
- Rojano-Ortega D, Berral-de la Rosa FJ. Effects of vitamin D supplementation on muscle function and recovery after exercise-induced muscle damage: A systematic review. J Hum Nutr Diet. 2023 Jun;36(3):1068-1078. https://doi.org/10.1111/jhn.13084. Epub 2022 Oct 3. PMID: 36149089
- Saengsiwaritt W, Ngamtipakon P, Udomsinprasert W. Vitamin D and autophagy in knee osteoarthritis: A review. Int Immunopharmacol. 2023 Jul 28;123:110712. https://doi.org/10.1016/j.intimp.2023.110712. Online ahead of print. PMID: 37523972
- Saleh A, Shibli F, El Masri J, et al. Osteoporosis and vitamin D consumption: knowledge and practice in different Arab countries. Arch Osteoporos. 2023 Jun 21;18(1):85. https://doi.org/10.1007/s11657-023-01298-8. PMID: 37341798
- Saleh A, Shibli F, Masri JE, et al. Correction: Osteoporosis and vitamin D consumption: knowledge and practice in different Arab countries. Arch Osteoporos. 2023 Jun 27;18(1):87. https://doi.org/10.1007/s11657-023-01300-3. PMID: 37368185
- Shah V, Zia H, Lo DF. Investigating seasonal association between vitamin D concentration, muscle mass and strength in postmenopausal women: a critical analysis. J Nutr Sci. 2023 Jul 13;12:e74. https://doi.org/10.1017/jns.2023.33. eCollection 2023. PMID: 37457678
- Sohouli MH, Wang S, Almuqayyid F, et al. Impact of vitamin D supplementation on markers of bone turnover: Systematic review and meta-analysis of randomised controlled trials. Eur J Clin Invest. 2023 Jun 14:e14038. https://doi.org/10.1111/eci.14038. Online ahead of print. PMID: 37314058
- Soltani Bajestani F, Khajavian N, Salarbashi D, et al. Relationship Between Serum Vitamin D Level and Disease Severity in Rheumatoid Arthritis. Clin Med Insights Arthritis Musculoskelet Disord. 2023 Jul 6;16:11795441231182997. https://doi.org/10.1177/11795441231182997. eCollection 2023. PMID: 37434995
- Song Y, Zhang H, Li M, et al. Gorham-Stout disease in the rib and spine treated with zoledronic acid, calcium, and vitamin D after vertebral biopsy: a case description with literature analysis. Quant Imaging Med Surg. 2023 May 1;13(5):3316-3325. https://doi.org/10.21037/qims-22-1090. Epub 2023 Feb 14. PMID: 37179924
- Sutherland JP, Zhou A, Hyppönen E. Muscle Traits, Sarcopenia, and Sarcopenic Obesity: A Vitamin D Mendelian Randomization Study. Nutrients. 2023 Jun 9;15(12):2703. https://doi.org/10.3390/nu15122703. PMID: 37375607
- Swadi A, Hilal N, Abdul-Aziz M. The role of melatonin and vitamin d in Iraqi premenopausal women osteoarthritis patients. Georgian Med News. 2023 May;(338):53-56. PMID: 37419471
- Tripepi G, Fusaro M, Arcidiacono G, et al. Evaluating benefit from vitamin D supplementation: defining the area for treatment. Osteoporos Int. 2023 May 27. https://doi.org/10.1007/s00198-023-06802-x. Online ahead of print. PMID: 37243726
- Venna NK, Lalhruaitluanga H, Challa S. Cowpea isoflavones enhance the osteoblast differentiation and antioxidant capacity in synergy with vitamin D and β-carotene: A mechanistic in vitro study. Nutr Health. 2023 Jun 20:2601060231181606. https://doi.org/10.1177/02601060231181606. Online ahead of print. PMID: 37338526
- Wang S, Luo Z, Luo H, et al. Effects of a calcium/vitamin D/Zinc combination on anti-osteoporosis in ovariectomized rats. J Trace Elem Med Biol. 2023 May;77:127138. https://doi.org/10.1016/j.jtemb.2023.127138. Epub 2023 Jan 26. PMID: 36773556
- Waterhouse M, Ebeling PR, McLeod DSA, et al. The effect of monthly vitamin D supplementation on fractures: a tertiary outcome from the population-based, double-blind, randomised, placebo-controlled D-Health trial. Lancet Diabetes Endocrinol. 2023 May;11(5):324-332. https://doi.org/10.1016/S2213-8587(23)00063-3. Epub 2023 Mar 31. PMID: 37011645
- Weintraub MT, Guntin J, Yang J, et al. Vitamin D3 Supplementation Prior to Total Knee Arthroplasty: A Randomized Controlled Trial. J Arthroplasty. 2023 Jun;38(6S):S114-S119. https://doi.

org/10.1016/j.arth.2022.08.020. Epub 2022 Aug 19. PMID: 35988825

- Welford A, Darling AL, Allison S, et al. Response to letter by Lo et al.: Investigating seasonal association between vitamin D concentration, muscle mass and strength in postmenopausal women: a critical analysis. J Nutr Sci. 2023 Jul 13;12:e75. https://doi.org/10.1017/jns.2023.34. eCollection 2023. PMID: 37457682
- Wiedemann P, Schmidt FN, Amling M, et al. Zinc and vitamin D deficiency and supplementation in hypophosphatasia patients - A retrospective study. Bone. 2023 Jul 22;175:116849. https://doi.org/10.1016/j.bone.2023.116849. Online ahead of print. PMID: 37487860
- Zabihiyeganeh M, Amini Kadijani A, Akbari A, et al. Association of serum vitamin D status with serum pro-inflammatory cytokine levels and clinical severity of fibromyalgia patients. Clin Nutr ESPEN. 2023 Jun;55:71-75. https://doi.org/10.1016/j.clnesp.2023.03.006. Epub 2023 Mar 9. PMID: 37202086
- Zhao M, Wei F, Li H, et al. Serum vitamin D levels and Sjogren's syndrome: bi-directional Mendelian randomization analysis. Arthritis Res Ther. 2023 May 15;25(1):79. https://doi.org/10.1186/s13075-023-03062-2. PMID: 37189174
- Zhao SS, Burgess S. Vitamin D is associated with reduced risk of Sjögren's syndrome: a Mendelian randomization study. Rheumatology (Oxford). 2023 Jul 14:kead356. https://doi.org/10.1093/rheumatology/kead356. Online ahead of print. PMID: 37449898
- Zhao SS, Mason A, Gjekmarkaj E, et al. Associations between vitamin D and autoimmune diseases: Mendelian randomization analysis. Semin Arthritis Rheum. 2023 Jun 30;62:152238. https://doi.org/10.1016/j.semarthrit.2023.152238. Online ahead of print. PMID: 37437450