VITAMIN D

UpDates Vol. 6 - N. 4 - 2023

Website www.vitamind-journal.it

www.pacinimedicina.it

ISSN: 2611-2876 (online)

Registration at the Court of Pisa no. 2/18 dated 23/2/2018
The editor remains available to those who are entitled with whom communication has not been possible as well as for any omissions. Photocopies for the reader's personal use (for their pro- reading, study or consultation) may be made within the limit of 15% of each volume/file of the periodical, excluding advertising pages, upon BP to SIAE of the fee provided for by Law no. 633 of 1941 and following the specific authorisation release of the by CLEARedi: https://www.clearedi.org/top-menu/HOME.aspx. Digital edition - January 2023.

EDITORIAL

Maurizio Rossini

Department of Medicine,
Rheumatology Section, University of Verona

VITAMIN D
UpDates
2023;6(4):130-131

Dear Colleagues,
The tissues that make up bones and skeletal muscles are intimately interconnected from a biomechanical standpoint, and it has been hypothesised that vitamin D may be considered a "director" molecule of the inter-tissue cross-talk that governs the structural and functional efficiency of the musculoskeletal system. In this issue you will find an update on the relationship between vitamin D deficiency and osteosarcopenia, and specifically on the mechanisms through which it seems that vitamin D influences muscle strength.
Muscles also have receptors for vitamin D. In animal studies it has been observed that their deletion leads to sarcopenia and muscle function deficits [1]. Furthermore, for some time now, it has been known that a condition of severe vitamin D deficiency can manifest in severe muscle weakness, especially among the proximal muscles, and thus in an increased risk of falls. Nevertheless, it is still being vigorously debated whether vitamin D supplementation in community-dwelling elderly adults will lead to an increase in muscle strength and reduce the risk of falls, or whether over-supplementation may exacerbate these outcomes.
Though a 2014 meta-analysis concluded that vitamin D supplementation improved muscle strength [2], this was not confirmed by two more recent meta-analyses [3,4]. Two recent meta-analysis studies, included in this issue's bibliography, found no significant reduction in the risk of falls and fractures with vitamin D supplementation [5,6]. Instead, two earlier meta-analysis studies showed that the risk of falls in deficient subjects was significantly reduced, but not, understandably, in non-deficient subjects [7,8]. Still, two recent RCTs [9,10], including the VITAL Study, observed no effect on the risk of falls, even though the participants were largely vitamin D deficient! On the other hand, as you may recall, the administration of a 500,000 IU vitamin D bolus, moreover largely among non-deficient subjects, was seen to be associated with an increased risk of falls after three months [11]. In addition, two other studies showed an increased risk of falls in those participants who achieved high serum 25(OH)D levels [12,13], whilst in the STOP-IT trial, a "U-curve" in the relationship between serum 25(OH)D levels and the risk of falls was observed, which indicated that a concentration of between 20 and 40 ng/mL could be viewed as optimal [14]. It is likely that the differences in the vitamin D status and the clinical profiles of the subjects receiving treatment (e.g. muscle performance, body mass index and comorbidities), the treatment schedule variability and the lack of well-defined primary endpoints could justify this discordance in results and thus generate an unfortunate level of uncertainty and confusion.
The other article in this issue has been dedicated to the possible anti-inflammatory role of vitamin D. The regulation of inflammation and cytokine expression is of crucial importance not only for many inflammatory diseases but also in view of the recent "inflammaging" hypothesis, which states that with increasing age there seems to in fact be a shift towards a pro-inflammatory state that would create and maintain a chronic basic state of inflammation, which would result in organ damage and progression towards various chronic diseases typical of ageing (e.g. rheumatological, metabolic, cardiovascular and cancerous conditions). That be-

Correspondence
Maurizio Rossini
maurizio.rossini@univr.it

How to cite this article: Rossini M. Editorial. Vitamin D - UpDates 2023;6(4):130-131.

ing the case, it has recently been observed that elderly people with vitamin D deficiency have higher levels of C-reactive protein in their blood [15]. Just a few and sometimes discordant studies have evaluated the effect of cholecalciferol administration on inflammatory status, particularly among deficient subjects, whilst bias has often limited the interpretation of these studies, especially when considering pathological conditions. In a group of young, healthy subjects who were vitamin D-deficient, we have recently observed that cholecalciferol supplementation brought about a progressive reduction in the levels of IL-6 and IL-17 [16], two key cytokines in the pathogenesis of rheumatoid arthritis and spondyloarthritis, respectively. Therefore, vitamin D deficiency could accelerate inflammaging whilst increasing the risk or progression of inflammatory diseases or reduce response to their treatment.
What are your thoughts?
Happy reading!

References

1 Girgis CM, Cha KM, So B, et al. Mice with myocyte deletion of vitamin D receptor have sarcopenia and impaired muscle function. J Cachexia Sarcopenia Muscle 2019;10:1228-1240. https://doi.org/10.1002/jcsm.12460

2 Beaudart C, Buckinx F, Rabenda V, et al. The effects of vitamin D on skeletal muscle strength, muscle mass, and muscle power: a systematic review and meta-analysis of randomized controlled trials. J Clin Endocrinol Metabol 2014;99:4336-4345. https://doi.org/10.1210/jc.2014-1742

3 Bislev LS, Grove-Laugesen D, Rejnmark L. Vitamin D and muscle health: a systematic review and meta-analysis of randomized placebo-controlled trials. J Bone Miner Res 2021;36:1651-1660 https://doi.org/10.1002/jbmr.4412

4 Prokopidis K, Giannos P, Katsikas Triantafyllidis K, et al. Effect of vitamin D monotherapy on indices of sarcopenia in community-dwelling older adults: a systematic review and meta-analysis. J Cachexia Sarcopenia Muscle 2022;13:1642-1652. https://doi.org/10.1002/jcsm.12976

5 Octary T, Gautama MSN, Duong H. Effectiveness of vitamin d supplements in reducing the risk of falls among older adults: a meta-analysis of randomized controlled trials. Ann Geriatr Med Res. 2023;27:192-203. https://doi.org/10.4235/agmr.23.0047

6 Myung SK, Cho H. Effects of intermittent or single high-dose vitamin D supplementation on risk of falls and fractures: a systematic review and meta-analysis. Osteoporos Int 2023;34:1355-1367. https://doi.org/10.1007/s00198-023-06761-3

7 LeBlanc ES, Chou R. Vitamin D and falls—fitting new data with current guidelines. JAMA Intern Med 2015;175:712-713. https://doi.org/10.1001/jamainternmed.2015.0248

8 Kong SH, Jang HN, Kim JH, et al. Effect of vitamin D supplementation on risk of fractures and falls according to dosage and interval: a meta-analysis. Endocrinol Metab Clin 2022;37:344-358. https://doi.org/10.3803/EnM.2021.1374

9 Khaw KT, Stewart AW, Waayer D, et al. Effect of monthly high-dose vitamin D supplementation on falls and non-vertebral fractures: secondary and post-hoc outcomes from the randomised, doubleblind, placebo-controlled ViDA trial. Lancet Diabetes Endocrinol 2017;5:438-447. https://doi.org/10.1016/S2213-8587(17)30103-1

10 LeBoff MS, Murata EM, Cook NR, et al. VITamin D and OmegA-3 TriaL (VITAL): effects of vitamin D supplements on risk of falls in the US population. J Clin Endocrinol Metabol 2020;105:2929-2938. https://doi.org/10.1210/clinem/dgaa311

11 Sanders KM, Stuart AL, Williamson EJ, et al. Annual high-dose oral vitamin D and falls and fractures in older women: a randomized controlled trial. JAMA 2010;303:1815-1822. https://doi.org/10.1001/jama.2010.594

12 Bischoff-Ferrari HA, Dawson-Hughes B, Orav EJ, et al. Monthly high dose vitamin D treatment for the prevention of functional decline: a randomized clinical trial. JAMA Intern Med 2016;176:175-183. https://doi.org/10.1001/jamainternmed.2015.7148

13 Smith LM, Gallagher JC, Suiter C. Medium doses of daily vitamin D decrease falls and higher doses of daily vitamin D3 increase falls: a randomized clinical trial. J Steroid Biochem Mol Biol 2017;173:317-322. https://doi.org/10.1016/j.jsbmb.2017.03.015

14 Dawson-Hughes B, Wang J, Barger K, et al. Intra-trial mean 25(OH)D and PTH levels and risk of falling in older men and women in the Boston STOP IT trial. J Clin Endocrinol Metabol 2022;107:e1932-e1937. https://doi.org/10.1210/clinem/dgac012

15 Laird E, O'Halloran AM, Molloy AM, et al. Vitamin D status & associations with inflammation in older adults. PLoS ONE 2023;18:e0287169. https://doi.org/10.1371/journal.pone.0287169

16 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

VITAMIN D
UpDates
2023;6(4):132-135
https://doi. org/10.30455/2611-2876-2023-7e

Vitamin D deficiency and osteosarcopenia

Giovanni Iolascon, Antimo Moretti

"Luigi Vanvitelli" University of Campania Multidisciplinary, Department of Medical-Surgical and Dental Specialities

INTRODUCTION

The musculoskeletal system can be considered one of the most advantageous anatomo-functional outcomes that have appeared throughout the evolutionary history of the animal world. This complex system sees the interaction of several organs and tissues, mostly of the same embryogenetic derivation, which integrate different vital functions, and which go beyond the primary purpose of locomotion, into a single "organ" that develops during the period of growth, and is modelled and remodelled throughout a person's life [1,2]. At least three fundamental tissues are involved in this anatomical-functional interaction: bone tissue, striated muscle tissue and adipose tissue.

These three tissues, which have the same embryological derivation, develop from the mesodermal germ layer, which can be divided into three basic regions: paraxial, intermediate and lateral mesoderm. Somitogenesis is a fundamental step that occurs in the paraxial mesoderm where cells divide into somites. Each somite contains specific precursors for the development of the axial skeleton (sclerotome), tendons (syndetome), skeletal muscles (myotome) and the dermis (dermatome) [3]. The sclerotome develops into pre-cartilage, then into cartilage, which finally undergoes ossification. The precursors derived from the paraxial mesoderm that turn towards myogenesis are under the control of Pax3/7 (Paired Box 3/7), followed by the activation of differentiation and fusion into multinucleated syncytium, i.e. myotubes, driven by the expression of myogenic factors, such as Myf5 (Myogenic Factor 5) and MyoD (Myogenic Differentiation).

The fusion of myotubes gives rise to muscle fibres, which then group into bundles and the bundles join together to form muscle tissue. Some of these cells, so-called "satellite cells", are Pax7+ muscle precursors that localise under the basal lamina of muscle fibres in a latent state and act as a source of myonuclei during postnatal growth and after muscle injury [4].

Bone and skeletal muscle tissue are intimately connected to each other from a biomechanical standpoint. Whilst bone plays a supportive role, muscle enables motor activity through the interaction of contractile proteins within sarcomeres and through their insertion through tendons onto skeletal structures. Both tissues also regulate energy metabolism through the production and release of several molecules, especially cytokines. Molecules produced by bone tissue and released into the circulation to carry out local or remote biological activity are called "osteokines". These include Wnt, sclerostin, RANK-L (Receptor Activator of Nuclear Kappa B Ligand), osteocalcin, FGF-23 (Fibroblast Growth Factor-23), BMP (Bone Morphogenetic Protein), PGE-2 (Prostaglandin E2), and IGF-1 (Insulin like Growth Factor-1). These molecules all have one or more roles modulating muscle's biological and functional activity. At the same time, muscle tissue produces other cytokines, known as myokines, including irisin, myostatin, various interleukins, and neurotrophic factors, which act in an autocrine, paracrine and endocrine manner. The cross-talk among the component tissues that make up the locomotor system is due precisely to the production and circulation of these different substances [5].

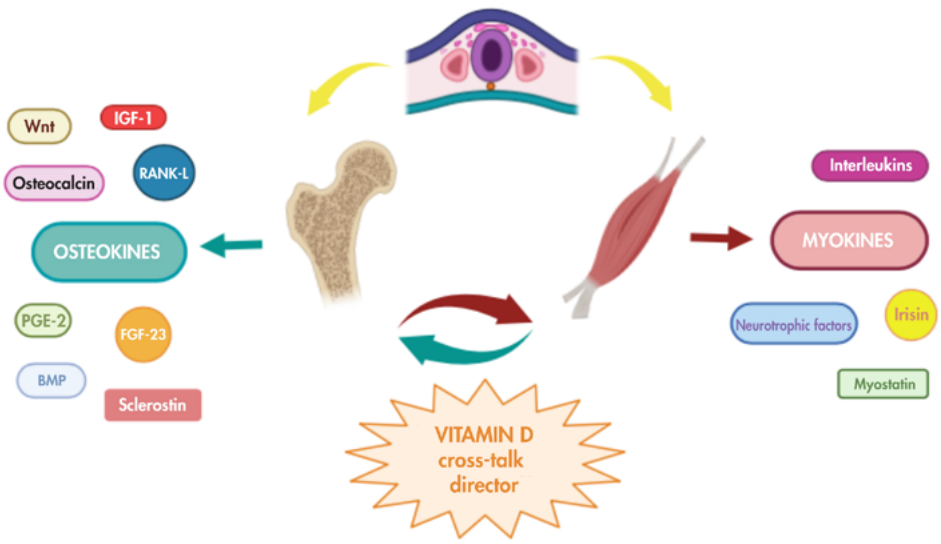
Deep knowledge of the function of the molecules involved in these complex interconnected tissue systems is necessary to identify useful therapeutic strategies for the management of musculoskeletal disorders, particularly osteosarcopenia.

There is speculation that vitamin D may be considered a "director" molecule of the inter-tissue cross-talk that governs the structural and functional efficiency of the musculoskeletal system [6] (Fig. 1).

Correspondence
Giovanni Iolascon
giovanni.iolascon@gmail.com

Conflict of interest
The Authors declare that they have received funding or have contracts or other forms of funding in place with Abiogen, Amgen and UCB.

How to cite this article: Iolascon G, Moretti A. Vitamin D deficiency and osteosarcopenia. Vitamin D – Updates 2023;6(4):132-135. https://doi.org/10.30455/2611-2876-2023-7e



IGF-1: Insuline like Growth Factor-1; RANK-L: Receptor Activator of Nuclear Kappa B Ligand; PGE-2: Prostaglandin E2; FGF-23: Fibroblast Growth Factor-23, BMP: Bone Morphogenetic Protein.

FIGURE 1.
Role of vitamin D in embryonic skeletal muscle development.

VITAMIN D AND OSTEOSARCOPENIA

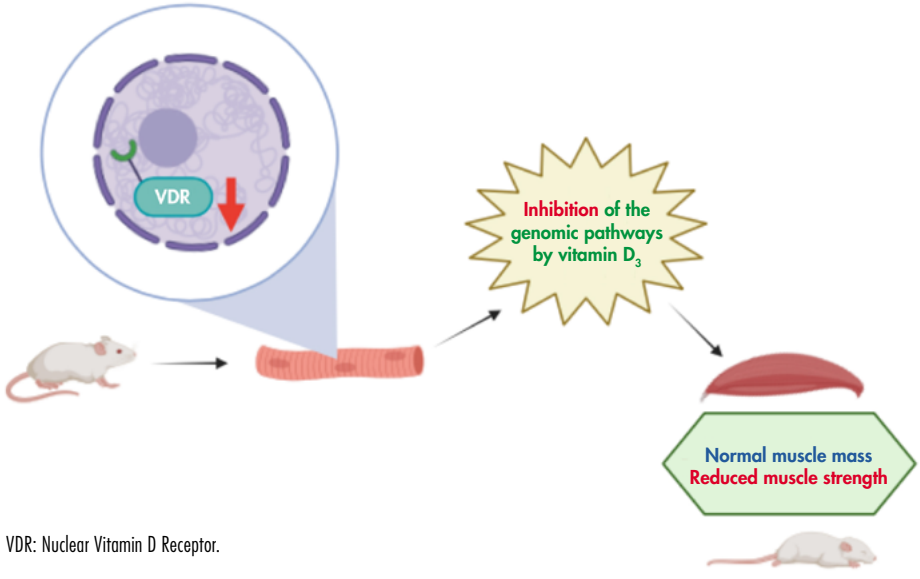
The relationship between the low concentration of vitamin D [25(OH)D_3] in the blood and age-related pathological conditions, such as osteoporosis and sarcopenia, has long been known. Equally well known is the close relationship between vitamin D deficiency and increased risk of falls, linked to consistent decrease in muscle strength, primarily due to the depletion of type 2 muscle fibres, which are principally engaged in postural changes [7-9]. For example, a decrease of type 2 muscle fibres will necessarily cause a significant increase in the risk of falling when one stands up from a seated position. After all, the replenishment of the serum level of 25(OH)D_3 of patients with established vitamin D deficiency through supplementation can induce a significant recovery of muscle strength, which can lead to an important reduction in the risk of falling among elderly patients [10].

As is well known, vitamin D primarily acts through a genomic pathway, which is mediated by binding to vitamin D nuclear receptors (VDRs). In the presence of a significant decrease in the serum level of vitamin D, which is frequent if not constant among many elderly patients, muscles are effected negatively, with histological signs of age-related muscle atrophy, characterised mainly by the depletion of type 2 fast-twitch muscle fibres. Experimental evidence has shown that inhibition of the vitamin D genomic pathway leads to muscle weakness in mature mice with muscle fibre-specific VDR deficiency, with no affect on muscle mass [11] (Fig. 2).

This finding appears to have been confirmed by a longitudinal epidemiological study of community residents, in whom serum 25(OH)D_3 levels had no significant effect on muscle mass, but were significantly correlated with muscle strength [11]. The aforementioned experimental and epidemiological data could well lead to the conclusion that vitamin D deficiency on mature muscle fibres exerts its negative effects primarily on muscle strength. As a consequence, it has therefore been hypothesised that since low serum vitamin D levels are closely related to age-related muscle weakness, 25(OH)D_3 dosage could be considered a good predictor of muscle weakness and therefore a biomarker of sarcopenia.

Although it could also be supposed that vitamin D deficiency does not act primarily through a depletion of muscle mass, it is probable, instead, that it acts to a greater extent through a reduced contractile function of individual muscle fibres, an impairment in motor unit activity due to decreased motor neuron discharge frequency, reduced nerve conduction velocity, and even excitation-contraction uncoupling. A non-secondary role in the genesis of the strength deficit could also be played by an increase in fat and fibrous tissue inside the muscle.

A recent animal study has revealed that the genomic pathway regulates muscle strength by modulating the expression of



VDR: Nuclear Vitamin D Receptor.

FIGURE 2.
Role of vitamin D on muscle mass and strength.

the calcium-dependent ATPase [12]. SERCA, which is a calcium pump in the sarcoplasmic reticulum membrane, concentrates calcium in the lumen of the sarcoplasmic reticulum (SR). Three distinct genes encode SERCA 1, 2 and 3, which are known to produce more than 10 isoforms. Typical isoforms are the following: SERCA1 is the fast twitch muscle isoform, SERCA2a is the slow twitch muscle isoform. VDR deficiency reduces SR Ca^2+ ATPase activity in mature myofibres, which is hypothesised to be induced by reduced SERCA gene expression. Therefore, it seems that Vitamin D alters muscle contraction dynamics by decreasing Ca^2+ reuptake in the SR, thus prolonging the relaxation phase of muscle contraction. In conclusion, reduced serum vitamin D levels lead to diminished VDR signalling in myofibres and causes an excitation-contraction uncoupling.

The non-genomic pathway by which vitamin D enters directly through the caveolae on cell membranes is modulated by a molecule interaction with a separate VDR (mVDR) pool or with a different membrane-bound or intracellular receptor. One candidate that has been proposed for such a membrane-bound protein that mediates the rapid non-genomic effects of vitamin D is PDIA3 (protein disulphide isomerase) also called $1\alpha,25D_3$-MARRS. This protein, which is associated with several cell membranes, including the plasma membrane and endoplasmic reticulum, is also known for its important role in protein folding. It has been reported that some of the new non-classical vitamin D hydroxy-metabolites, formed by CYP11A1, interact with both the nuclear VDR and membrane-bound $1\alpha,25D_3$-MARRS [13].

The interactions between vitamin D and the aforementioned membrane receptors realise the activation of a plethora of intracellular signal transduction pathways. It has been hypothesised that the non-genomic action of vitamin D activates a cascade of mitogen-activated protein kinase (MAPK), extracellular signal-regulated kinase (ERK) 1 and 2 through several intermediate effectors, which are activated when vitamin D binds to the VDR. Activated VDR stimulates calcium influx, which, in turn, activates calcium-driven intracellular pathways such as protein kinase C (PKC). Furthermore, vitamin D could activate G-protein-coupled receptors (GPCRs), which, in turn, would stimulate several downstream pathways, including phosphoinositide 3-kinase (PI3K), adenylate cyclase (AC), Ras and phospholipase C gamma (PLCγ). Through different signals, each of these pathways could converge on the activation of ERK-MAPK 1/2, which would then interact with the classical VDR-driven genomic pathway to modulate gene expression.

NEW VITAMIN D TARGETS IN MUSCLE FIBRE

The contractile function of skeletal muscle is regulated by cytosolic calcium, which is provided by transport from the sarcoplasmic reticulum and supplied by ATP hydrolysis produced by SERCA. Vitamin D causes an upregulation of SERCA expression by supplying ionised calcium in the cytosol and thus contributing to the maintenance of muscle strength. Clearly, therefore, vitamin D acts in muscle cells by promoting ATP consumption. It has further been hypothesised that vitamin D upregulates LIN-43 expression in a dose-dependent manner, promoting the release of inorganic phosphates, such as pyrophosphate, into cell surface niches where they play an important role in ATP metabolism [14].

Indeed, extra-skeletal pyrophosphates suppress ectopic calcification in muscle tissue. Ectopic calcification in skeletal muscle has been observed in mouse models showing impaired muscle function, such as Duchenne muscular dystrophy or focal skeletal muscle injury [15]. Vitamin D should have a controlling activity on skeletal muscle calcification, which is essential for maintaining proper locomotor activity.

CONCLUSION

Among vitamin D's extra-skeletal actions, what happens on striated muscle certainly impacts people's health considerably. Abundant scientific evidence has been found that confirms the activity of vitamin D in promoting muscle structure development during embryonic and foetal life as well as skeletal muscle regeneration and repair during adult life.

Furthermore, vitamin D plays a key role in the functional capacity of muscle fibre by promoting maximal efficiency of excitation/contraction coupling and in counteracting age-related structural and functional impairment of muscle and other sarcopenia conditions.

References

1 Nejad Kourki A. The evolution of complex multicellularity in animals. Biol Philos 2022;37:43. https://doi.org/10.1007/s10539-022-09870-1

2 Karasik D, Kiel DP. Genetics of the musculoskeletal system: a pleiotropic approach. J Bone Miner Res 2008;23:788-802. https://doi.org/10.1359/jbmr.080218

3 Hirschfeld HP, Kinsella R, Duque G. Osteosarcopenia: where bone, muscle, and fat collide. Osteoporos Int 2017;28:2781-2790. https://doi.org/10.1007/s00198-017-4151-8

4 Chal J, Pourquié O. Making muscle: skeletal myogenesis in vivo and in vitro. Development 2017;144:2104-2122. https://doi.org/10.1242/dev.151035

5 Kirk B, Feehan J, Lombardi G, et al. Muscle, bone, and fat cross-talk: the biological role of myokines, osteokines, and adipokines. Curr Osteoporos Rep 2020;18:388-400. https://doi.org/10.1007/s11914-020-00599-y

6 Gunton JE, Girgis CM, Baldock PA, et al. Bone muscle interactions and vitamin D. Bone 2015;80:89-94. https://doi.org/10.1016/j.bone.2015.02.029

7 Iolascon G, Mauro GL, Fiore P, et al. Can vitamin D deficiency influence muscle performance in postmenopausal women? A multicenter retrospective study. Eur J Phys Rehabil Med 2018;54:676-682. https://doi.org/10.23736/S1973-9087.17.04533-6

8 Gimigliano F, Moretti A, de Sire A, et al. The combination of vitamin D deficiency and overweight affects muscle mass and function in older post-menopausal women. Aging Clin Exp Res 2018;30:625-631. https://doi.org/10.1007/s40520-018-0921-1

9 Iolascon G, Moretti A, de Sire A, et al. Effectiveness of calcifediol in improving muscle function in post-menopausal women: a prospective cohort study. Adv Ther 2017;34:744-752. https://doi.org/10.1007/s12325-017-0492-0

10 Iolascon G, Moretti A, de Sire A, et al. Effectiveness of calcifediol in improving muscle function in post-menopausal women: a prospective cohort study. Adv Ther 2017;34:744-752. https://doi.org/10.1007/s12325-017-0492-0

11 Mizuno T, Hosoyama T, Tomida M, et al. Influence of vitamin D on sarcopenia pathophysiology: A longitudinal study in humans and basic research in knockout

mice. J Cachexia Sarcopenia Muscle 2022;13:2961-2973. https://doi.org/10.1002/jcsm.13102

12 Mori R, Mae M, Yamanaka H, et al. Locomotor function of skeletal muscle is regulated by vitamin D via adenosine triphosphate metabolism. Nutrition. 2023 Nov;115:112117. https://doi.org/10.1016/j.nut.2023.112117.

13 Norlin M, Wikvall K. Enzymatic activation in vitamin D signaling - Past, present and future. Arch Biochem Biophys 2023;742:109639. https://doi.org/10.1016/j.abb.2023.109639

14 Goodenough DA, Paul DL. Beyond the gap: functions of unpaired connexon channels. Nat Rev Mol Cell Biol 2003;4:285-94. https://doi.org/10.1038/nrm1072

15 Dubuisson N, Versele R, Planchon C, et al. Histological methods to assess skeletal muscle degeneration and regeneration in Duchenne Muscular Dystrophy. Int J Mol Sci 2022;23:16080. https://doi.org/10.3390/ijms232416080

Effects of vitamin D deficiency on inflammatory cytokines

VITAMIN D
UpDates
2023;6(4):136-139
https://doi. org/10.30455/2611-2876-2023-8e

Ombretta Viapiana
University of Verona Department of Medicine

Besides playing a key role in maintaining bone health, vitamin D has also been recognised for its antibacterial, antiproliferative, immunomodulatory and anti-inflammatory actions [1,2], whilst its immunomodulatory functions have increasingly become of scientific interest. Indeed, in recent years, both clinical and epidemiological data supporting the link between vitamin D status and the incidence and severity of immunocorrelated conditions, such as multiple sclerosis, psoriasis, diabetes, rheumatoid arthritis, inflammatory bowel disease and infectious diseases, have been published [1,2]. Whereas the association between these pathological events and vitamin D deficiency has been widely demonstrated, the effect of cholecalciferol supplementation on the same phenomena has not. To complicate the picture, published studies are extremely heterogeneous in terms of the populations considered, the basal 25(OH)D levels, the extent of supplementation and the modality applied to administration (daily rather than boluses).

Attention to the effect of cholecalciferol supplementation on immune cells and inflammatory cytokines was certainly rekindled by publication of the VITAL study last year. In this study, 25,571 subjects were enrolled and randomised to take 2,000 IU of cholecalciferol per day (with or without omega-3 supplementation) versus placebo for five years, demonstrating a 22% reduction in the incidence of autoimmune diseases, including rheumatoid arthritis, polymyalgia rheumatica and psoriasis [3].

The regulation of inflammation and cytokine expression is also of crucial importance for the recent "inflammaging" hypothesis, which proposes that with increasing age there appears to be a shift towards a proinflammatory state that tends to create and maintain a chronic low-grade inflammation (only partially detectable by serum biomarkers such as C-reactive protein [CRP]) with a subsequent slow accumulation of damage. This acceleration toward ageing, driven by chronic inflammation, is believed to be the basis for progression to several chronic diseases [4]. This has also been confirmed by a recent Anglo-Saxon biobank study of 397,737 subjects, aged between 37 and 73 years. Vitamin D deficiency was found to be associated with increased mortality from several causes, although not with classical serum inflammatory markers. If this is valid in the general population, however, it may be different in patient populations with high levels of inflammation, such as those with cancer, diabetes mellitus or acute cardiovascular disease, where supplementation in deficient subjects showed a reduction in high-sensitivity PCR [5].

VITAMIN D MECHANISM OF ACTION

Though vitamin D can act through an endocrine mechanism (the typical regulatory action of bone metabolism), it can also act through autocrine-paracrine signalling because of the presence of the enzyme 1 α-hydroxylase capable of producing the active metabolite $1,25(OH)_2D$ within individual cells. Actually, it is the autocrine-paracrine action, which is responsible for the effect on immune system cells and consequently on proinflammatory cytokine production. The action of the active metabolite produced this way is modulated by binding to its receptor (VDR). The VDR found in the nucleus of multiple cell types mediates two types of actions, namely [1-6]:

- The non-genomic pathway: binding of the ligand to VDRs present in the cytosol triggers multiple pathways in intracellular signalling cascades, which lead to immediate responses independent of gene transcription in the cells;
- The genomic pathway: the retinoic acid receptor forms a heterodimer with the VDR bound to $1,25(OH)_2D$. The heterodimer translocates into the cell nucleus and binds to specific vitamin D response elements (VDREs) on target genes, thereby regulating nuclear transcription.

Both VDR and 1-α-hydroxylase are expressed by different types of immune cells, including

Correspondence
Ombretta Viapiana
ombretta.viapiana@univr.it

Conflict of interest
The Author declares no conflict of interest.

How to cite this article: Viapiana O. Effects of vitamin D deficiency on inflammatory cytokines. Vitamin D – Updates 2023;6(4):136-139. https://doi.org/10.30455/2611-2876-2023-8e

macrophages, T-cells, dendritic cells, monocytes and B-cells. Evidence from preclinical studies has shown that vitamin D exerts biological effects on both the innate and adaptive immune systems (Tab. I). Extra-renal 1-α-hydroxylase is not up-regulated by PTH (parathyroid hormone). Therefore, the production of $1,25(OH)_2D_3$ depends on the levels of the $25(OH)D_3$ substrate and can be regulated by inflammatory signals, such as polysaccharide (LPS) and the same cytokines. Vitamin D is believed to have a direct effect on cytokine production, the main mechanisms of which are summarised in Table II [6].

TABLE I.
Main effects of vitamin D on the activity of cells involved in innate and adaptive immunity.

Innate immunity	Adaptive immunity
Increases differentiation of macrophages	Decreases Th1 cytokines
Bactericidal action	Increases Th2 cytokines
Inhibits dendritic cell maturation	Reduces differentiation to Th17
Inhibits antigen presentation	Increases differentiation of T-regs
	Reduces B-cell proliferation
	Induces B-cell apoptosis
	Inhibits plasma cell production
	Inhibits immunoglobulin secretion

Th1: T Helper 1; Th2: T Helper 2; Th17: T Helper 17, T-regs: Regulatory T cells.

TABLE II.
Main mechanisms by which vitamin D exerts its anti-inflammatory effect.

Molecular target	Mechanism	Effect
MAP kinase phosphatase 5	Activates the enzyme which in turn inhibits p38	Blocks amplification of the inflammatory cascade mediated by p38
NF-kB	Inhibits NF-kB transcription factor through VDR binding	Reduces transcription/production of TNF-α, IL-1b and consequently IL-6
Cyclooxygenase 2	Directly inhibits prostaglandin production	Reduces cell proliferation and angiogenesis

TNF-α: tumour necrosis factor-alpha; NF-kB: nuclear factor kappa B; IL-1β: interleukin-1 beta; IL-6: interleukin-6.

VITAMIN D DEFICIENCY AND PRO-INFLAMMATORY CYTOKINES

Vitamin D deficiency, often associated with increased serum levels of pro-inflammatory mediators, including IL-6 and tumour necrosis factor-alpha (TNF-α), are related to both the development and progression of rheumatic and vascular inflammatory diseases [1,2]. Apart from what has by now been considered outdated evidence that observed an association between vitamin D deficiency and pro-inflammatory cytokines in classic inflammatory rheumatological diseases, such as rheumatoid arthritis or connective tissue disorders, a study was recently published that documented a linear correlation between the extent of vitamin D deficiency and increased levels of IL-6 and IL-8 in fibromyalgia. Specifically, reduced vitamin D levels were found to be associated with higher scores for both widespread pain as well as for disease activity [7].

In a similar manner, in another study by the same authors on patients with osteoarthritis of the knee, a correlation was observed between vitamin D deficiency and higher IL-6 levels, whilst the IL-6 levels in turn were found to be associated with the radiographic stage of the disease and with the patient's functionality scale [8].

Finally, in a study on obese patients, it was shown that reduced serum 25(OH)D concentrations were usually correlated with increased levels of other biomarkers of vascular inflammation, such as high-sensitivity PCR and fibrinogen. Similar conclusions were also reached for severely obese children [1].

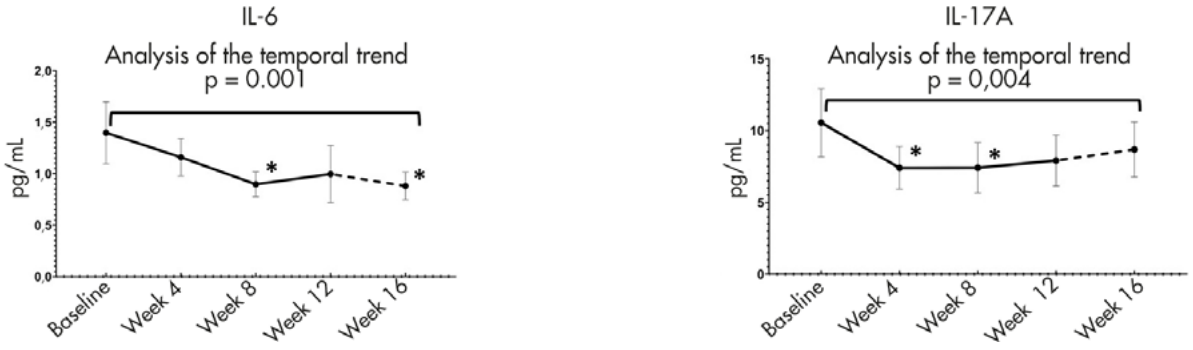
All these studies support the hypothesis that among vitamin D-deficient subjects there is a concomitant rise in pro-inflammatory cytokines regardless of whether the subjects were healthy or were suffering from various rheumatological and non-rheumatological diseases.

EFFECT OF CHOLECALCIFEROL ADMINISTRATION IN CHOLECALCIFEROL-DEFICIENT SUBJECTS

Although a great deal of evidence has been found that supports the association between vitamin D deficiency and increased inflammatory cytokines, few studies have evaluated the effect of cholecalciferol administration on inflammatory status, whereas, often there has been bias that has limited interpretation. In a group of young, healthy subjects, who were however vitamin D-deficient, the effect of cholecalciferol administered over 12 weeks on the production of IL-17A, IL-6, IL-8, IL-10, IL-23 and TNF-α was recently evaluated. Though we observed a progressive reduction in IL-6 and IL-17A levels, no significant differences were found in the serum concentrations of the other cytokines (Fig. 1) [9]. IL-6 and IL-17 are two key cytokines in rheumatoid arthritis and spondyloarthritis, respectively. The reduction in serum levels observed in this study could support a possible role of vitamin D supplementation for patients with rheumatological diseases to optimise their therapeutic response to specific drugs. In support of this option, it was also observed that, depending on serum 25(OH)D levels, vitamin D supplementation would have different (positive) effects on pain and disease activity among patients with rheumatoid arthritis [10].

CONCLUSIONI

Gli studi che hanno valutato l'effetto della supplementazione con vitamina D sulle citochine infiammatorie sono ancora pochi, talvolta con risultati discordanti e spesso non confrontabili tra loro in quanto condotti su popolazioni a volte carenti, a volte no e con comorbilità differenti. Tuttavia negli studi condotti su soggetti giovani, sani e carenti di vitamina D, dove i fattori confondenti sono ridotti, ed è possibile così



IL-6: interleukin-6; IL-17A: interleukin-17°.

FIGURE 1.
Effects of cholecalciferol supplementation on serum levels of IL-6 and IL-17A in young, healthy, vitamin D-deficient subjects [9].

valutare l'effetto "puro" del colecalciferolo, si evidenzia un effetto della supplementazione nel ridurre le citochine pro-infiammatorie. Se questi dati si confermassero, la vitamina D potrebbe diventare un trattamento complementare nella prevenzione e nel trattamento di numerose patologie reumatiche e infiammatorie.

Instead, in another study on healthy but elderly subjects (average age over 70 years), cholecalciferol administration did not change gene expression or serum levels of IL-6, IL-8, IL-10, TNF-α or IFN-γ. Regardless, it should be noted that basal serum 25(OH)D levels were higher than in the previous study and the cholecalciferol dosage varied among treatment groups [11].

The effect on cytokine reduction was also studied in a small group of healthy men undergoing intense endurance exercise. Compared to placebo, the supplemented subjects showed positive effects in terms of increased blood levels of 25(OH)D, of CD4+/CD8+ ratio (immune response) and of aerobic capacity, through the inhibition of inflammatory cytokines (IL-6 and to a lesser extent TNF) and CK(creatine kinase) and LDH (lactate dehydrogenase) (indicators of muscle damage) [12].

Table III summarises the main features of studies that have assessed the effects of cholecalciferol supplementation on serum levels of inflammatory cytokines. The effect has been found to be more controversial in disease conditions. Some years ago, a meta-analysis of over 80 studies on different disease conditions, showed no significant effects of vitamin D supplementation on inflammatory biomarkers, including C-reactive protein, IL-6 and TNF-α. It should be noted that in addition to the heterogeneity of the pathological conditions and their pathogenesis, Il-6 was assayed in only 22 of these studies, whereas TNF-α was measured in only 25 [13].

Assessing some specific clinical conditions, Corrado et al. recently showed that in vitro exposure to increasing doses of 1-25(OH)$_2$D in deficient subjects was associated with a significant reduction in IL-17A and profibrotic cytokines (FGF2, TGF-β, CTGF) whether the patients had systemic sclerosis or were healthy, both with a dose-dependent effect [14].

Instead, in 44 vitamin D deficient multiple sclerosis patients, an increase in serum levels of anti-inflammatory cytokines (IL-10, TGF-β) and the regulatory IFN-γ was observed after 12 months of supplementation with 500-1000 IU/day [depending on basal 25(OH)D levels] of cholecalciferol, while IL-17 (proinflammatory) remained unchanged [15].

Among patients with cardiovascular disease, in deficient subjects, vitamin D supplementation was able to reduce the expression of pro-inflammatory and pro-atherogenic cy-

TABLE III.
Studies that evaluated the effect of cholecalciferol administration on pro-inflammatory cytokines.

Author	No. of patients	Median age (years)	25(OH)D (ng/mL)	Dose administered	Duration	Effect
Fassio et al.	75	34	13.7	• 10,000 IU/day for 8 weeks then 1,000 IU/day for 4 weeks • 50,000 IU/week for 12 weeks • 100,000 IU every other week for 12 weeks	12 weeks	Reduces IL-6 and IL-17a
Berlanga et al.	305	72	20	• 4,000 IU/day • 2,000 IU/day • Placebo	1 year	No significant effect
Liu et al.	18	22	22	• 5,000 IU/day • Placebo	4 weeks	Reduces IL-6

IL-6: interleuchina-6; IL-17A: interleuchina-17A.

tokines such as IL-2 and interferon-γ (IFN-7), which are responsible for T-helper-1 cell activation and vascular inflammation [1].
The condition of obesity deserves a separate discussion. Chronic low-grade inflammation appears to play a crucial role in the development of obesity-associated comorbidities such as insulin resistance, cardiovascular disease and cancer. The systemic inflammatory response brought about by obesity appears to mainly originate from adipose tissue, promoting the infiltration of inflammatory cells (macrophages) and the release of pro-inflammatory mediators, leading to low-grade systemic inflammation. In support of this, previous studies showed some positive correlations between adipose tissue volume and the secretion of pro-inflammatory cytokines [4]. One recent study evaluated the effect of supplementation with probiotics (strains of lactobacilli and bifidobacteria), omega-3 and omega-6 and vitamin D on low-grade inflammation among overweight and obese individuals. The study showed no differences on the primary outcome, which was hs-CRP (high-sensitivity C-reactive protein) levels. However, among the subjects treated, serum levels of IL-6 decreased after administration indicating an albeit modest effect on inflammation [16].
The main limitations of this study were, apart from the limited case series, the simultaneous administration of omega-3-6 probiotics and cholecalciferol, which do not allow the effect of the individual elements to be distinguished, and the low dose of vitamin D administered (200 IU/day, well below the doses that have so far demonstrated extra-skeletal effects).
Although the rationale is very strong, only one study documented a reduction in serum IL-6 concentration after cholecalciferol administration alone among obese subjects [17].

CONCLUSIONS

Though there are few studies that have evaluated the effect of vitamin D supplementation on inflammatory cytokines, they sometimes had discordant results, were often not comparable with one another because they were conducted on populations that were sometimes deficient, sometimes not and often the subjects had different comorbidities. However, in studies conducted on young, healthy, vitamin D-deficient subjects, where confounding factors were reduced, and the "pure" effect of cholecalciferol could thus be assessed, it was shown that one effect was that supplementation reduced pro-inflammatory cytokines. If these data were to be confirmed, vitamin D could then become a complementary therapy in the prevention and treatment of numerous rheumatic and inflammatory diseases.

References

1 Holick MF, Mazzei L, García Menéndez S, et al. Genomic or non-genomic? A question about the pleiotropic roles of vitamin D in inflammatory-based diseases. Nutrients 2023;15:767. https://doi.org/10.3390/nu15030767

2 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

3 Hahn J, Cook NR, Alexander EK, et al. Vitamin D and marine omega-3 fatty acid supplementation and incident autoimmune disease: VITAL randomized controlled trial. BMJ 2022;376:e066452. https://doi.org/10.1136/bmj-2021-066452

4 Laird E, O'Halloran AM, Molloy AM, et al. Vitamin D status & associations with inflammation in older adults. PLoS ONE 2023;18:e0287169. https://doi.org/10.1371/journal.pone.0287169

5 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;38:957-971. https://doi.org/10.1007/s10654-023-01023-2

6 El-Sharkawy A, Malki A. Vitamin D signaling in inflammation and cancer: molecular mechanisms and therapeutic implications. Molecules 2020;25:3219. https://doi.org/10.3390/molecules25143219

7 Zabihiyeganeh M, Kadijani AA, Akbari A, et al. Association of serum vitamin D status with serum pro-inflammatory cytokine levels and clinical severity of fibromyalgia patients. Clinical Nutr ESPEN 2023;55:71-75. https://doi.org/10.1016/j.clnesp.2023.03.006

8 Kadijani AA, Bagherifard A, Mohammadi F, et al. Association of serum vitamin D with serum cytokine profile in patients with knee osteoarthritis. Cartilage 2021;13:1610S-1618S. https://doi.org/10.1177/19476035211010309

9 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

10 Adami G, Rossini M, Bogliolo L, et al. An exploratory study on the role of vitamin D supplementation in improving pain and disease activity in rheumatoid arthritis. Mod Rheumatol 2019;29:1059-1062. https://doi.org/10.1080/14397595.2018.1532622

11 Berlanga-Taylor AJ, Plant K, Dahl A, et al. Genomic response to vitamin D supplementation in the setting of a randomized, placebo-controlled trial. EBioMedicine 2018;31:133-142. https://doi.org/10.1016/j.ebiom.2018.04.010

12 Liu MC, Weng PW, Chen SC, et al. Immunologic, anti-inflammatory, and anti-muscle damage profile of supplemented vitamin D_3 in healthy adults on strenuous endurance exercise. Biology (Basel) 2023;12:657. https://doi.org/10.3390/biology12050657.

13 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

14 Corrado A, Rotondo C, Sanpaolo ER, et al. 1,25OH-Vitamin D3 and IL-17 Inhibition Modulate Pro-Fibrotic Cytokines Production in Peripheral Blood Mononuclear Cells of Patients with Systemic Sclerosis. Int J Med Sci 2022;19:867-877. https://doi.org/10.7150/ijms.70984

15 Walawska-Hrycek A, Galus W, Hrycek E, et al. The impact of vitamin D low doses on its serum level and cytokine profile in multiple sclerosis patients. J Clin Med 2021;10:2781. https://doi.org/10.3390/jcm10132781

16 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;24:8567. https://doi.org/10.3390/ijms24108567

17 Beilfuss J, Berg V, Sneve M, et al. Effects of a 1-year supplementation with cholecalciferol on interleukin-6, tumor necrosis factor-alpha and insulin resistance in overweight and obese subjects. Cytokine 2012;60:870-874. https://doi.org/10.1016/j.cyto.2012.07.032

BIBLIOGRAPHIC SELECTION

CARDIOLOGY

- 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

- 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

- Chen Z, Liu M, Xu X, et al. Serum klotho modifies the associations of 25-hydroxy vitamin D with all-cause and cardiovascular mortality. J Clin Endocrinol Metab. 2023 Aug 15:dgad480. https://doi.org/10.1210/clinem/dgad480. Online ahead of print. PMID: 37579499

- Ding X, Lai J, Zhang H, et al. Vitamin D, vitamin D supplementation and atrial fibrillation risk in the general population: updated systematic review and meta-analysis of prospective studies. Front Nutr. 2023 Sep 21;10:1246359. https://doi.org/10.3389/fnut.2023.1246359. eCollection 2023. PMID: 37810914

- 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 Sep;11(9):634. https://doi.org/10.1016/S2213-8587(23)00198-5. Epub 2023 Jul 13. PMID: 37454668

- Fu M, Li X, Hu Z, et al. Serum levels of 25-OH vitamin D levels predict cognitive impairments among acute coronary syndrome patients. J Cardiovasc Med (Hagerstown). 2023 Oct 1;24(10):737-745. https://doi.org/10.2459/JCM.0000000000001542. PMID: 37642948

- Gachemba YM, Khan Z, Njau E, et al. Vitamin D Deficiency and Its Association With Cardiovascular Diseases Among Patients Attending a Private Tertiary Sector Cardiovascular Heart Clinic in Nairobi. Cureus. 2023 Aug 6;15(8):e43012. https://doi.org/10.7759/cureus.43012. eCollection 2023 Aug. PMID: 37680439

- 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

- Hung M, Birmingham WC, Ocampo M, et al. The Role of Vitamin D in Cardiovascular Diseases. Nutrients. 2023 Aug 11;15(16):3547. https://doi.org/10.3390/nu15163547. PMID: 37630735

- Kong SY, Jung E, Hwang SS, et al. Circulating Vitamin D Level and Risk of Sudden Cardiac Death and Cardiovascular Mortality: A Dose-Response Meta-Analysis of Prospective Studies. J Korean Med Sci. 2023 Aug 21;38(33):e260. https://doi.org/10.3346/jkms.2023.38.e260. PMID: 37605499

- Mattumpuram J, Maniya MT, Faruqui SK, et al. Cardiovascular and Cerebrovascular Outcomes with Vitamin D Supplementation: A Systematic Review and Meta-Analysis. Curr Probl Cardiol. 2023 Oct 4:102119. https://doi.org/10.1016/j.cpcardiol.2023.102119. Online ahead of print. PMID: 37802169

- Meng R, Radkhah N, Ghalichi F, et al. The Impact of Vitamin D Supplementation on Improving Blood Pressure: Evidence Obtained From an Umbrella Meta-Analysis. Clin Ther. 2023 Aug 21:S0149-2918(23)00294-1. https://doi.org/10.1016/j.clinthera.2023.07.020. Online ahead of print. PMID: 37612170

- Patriota P, Guessous I, Rezzi S, et al. Vitamin D Levels Are Associated with Cardiovascular Disease Events but Not with Cardiovascular Disease or Overall Mortality: A Prospective Population-Based Study. Nutrients. 2023 Sep 18;15(18):4046. https://doi.org/10.3390/nu15184046. PMID: 37764829

- Ponasenko A, Sinitskaya A, Sinitsky M, et al. The Role of Polymorphism in the Endothelial Homeostasis and Vitamin D Metabolism Genes in the Severity of Coronary Artery Disease. Biomedicines. 2023 Aug 25;11(9):2382. https://doi.org/10.3390/biomedicines11092382. PMID: 37760823
- Quan QL, Yoon KN, Lee JS, et al. Impact of ultraviolet radiation on cardiovascular and metabolic disorders: The role of nitric oxide and vitamin D. Photodermatol Photoimmunol Photomed. 2023 Sep 20. https://doi.org/10.1111/phpp.12914. Online ahead of print. PMID: 37731181
- Sattar N. There is no evidence that vitamin D prevents cardiovascular events. BMJ. 2023 Aug 1;382:1765. https://doi.org/10.1136/bmj.p1765. PMID: 37527848
- Sturmberg J. Study results show vitamin D is around 99% ineffective in preventing major cardiovascular events. BMJ. 2023 Aug 1;382:1767. https://doi.org/10.1136/bmj.p1767. PMID: 37527851
- 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
- Verdoia M, De Luca G, Rognoni A. [Degenerative calcific aortic valve stenosis: why not neglect vitamin D?]. G Ital Cardiol (Rome). 2023 Aug;24(8):675. https://doi.org/10.1714/4068.40537. PMID: 37492876
- 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 Oct;264:177-182. https://doi.org/10.1016/j.ahj.2023.05.024. Epub 2023 Jun 10. PMID: 37302737
- 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
- Zhou Y, Jiang M, Sun JY, et al. The Association Between Vitamin D Levels and the 10-Year Risk of Atherosclerotic Cardiovascular Disease: A Population-Based Study. J Cardiovasc Nurs. 2023 Sep-Oct 01;38(5):E178-E186. https://doi.org/10.1097/JCN.0000000000000943. Epub 2022 Sep 29. PMID: 36178328

CORONA VIRUS DISEASE

- Aci R, Keskin A, Yigit S, et al. Effect of vitamin D receptor gene BsmI polymorphism on hospitalization of SARS-CoV-2 positive patients. Nucleosides Nucleotides Nucleic Acids. 2023 Aug 30:1-12. https://doi.org/10.1080/15257770.2023.2253281. Online ahead of print. PMID: 37647163
- Ahmed IE, Ali A, Humayun A. Association Of Pre-Infection Vitamin D Status With COVID-19 Severity. J Pak Med Assoc. 2023 Aug;73(8):1770. https://doi.org/10.47391/JPMA.8244. PMID: 37697793
- Al Sulaiman K, Korayem GB, Aljuhani O, et al. Survival implications vs. complications: unraveling the impact of vitamin D adjunctive use in critically ill patients with COVID-19-A multicenter cohort study. Front Med (Lausanne). 2023 Aug 24;10:1237903. https://doi.org/10.3389/fmed.2023.1237903. eCollection 2023. PMID: 37692775
- 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 Oct;47(10):1728-1736. https://doi.org/10.1002/cbin.12064. Epub 2023 Jun 27. PMID: 37369952
- Aryafar M, Gholami F, Bozorgmehr R. Vitamin D status and blood group among severe COVID-19 patients. Ann Med Surg (Lond). 2023 Jul 26;85(9):4262-4267. https://doi.org/10.1097/MS9.0000000000000955. eCollection 2023 Sep. PMID: 37663733
- Bogomaz V, Shatylo S. Vitamin D as a predictor of negative outcomes in hospitalized COVID-19 patients: An observational study. Can J Respir Ther. 2023 Aug 24;59:183-189. https://doi.org/10.29390/001c.87408. eCollection 2023. PMID: 37781346
- Cavarzere P, Pausilli R, Nicolussi Prinicpe L, et al. Decreased vitamin D levels in the pediatric population after COVID-19 lockdown. Ital J Pediatr. 2023 Sep 5;49(1):113. https://doi.org/10.1186/s13052-023-01515-7. PMID: 37670325
- Chen KY, Lin CK, Chen NH. Effects of vitamin D and zinc deficiency in acute and long COVID syndrome. J Trace Elem Med Biol. 2023 Aug 9;80:127278. https://doi.org/10.1016/j.jtemb.2023.127278. Online ahead of print. PMID: 37566973
- Chen TB, Chang CM, Yang CC, et al. Neuroimmunological Effect of Vitamin D on Neuropsychiatric Long COVID Syndrome: A Review. Nutrients. 2023 Aug 30;15(17):3802. https://doi.org/10.3390/nu15173802. PMID: 37686834
- di Filippo L, Frara S, Nannipieri F, et al. Low Vitamin D Levels Are Associated With Long COVID Syndrome in COVID-19 Survivors. J Clin Endocrinol Metab. 2023 Sep 18;108(10):e1106-e1116. https://doi.org/10.1210/clinem/dgad207. PMID: 37051747
- di Filippo L, Frara S, Terenzi U, et al. Lack of vitamin D predicts impaired long-term immune response to COVID-19 vaccination. Endocrine. 2023 Aug 17. https://doi.org/10.1007/s12020-023-03481-w. Online ahead of print. PMID: 37592162
- Ganmaa D, Chinbayar T, Khudaykov P, et al. Latent TB Infection, Vitamin D Status and COVID-19 Severity in Mongolian Patients. Nutrients. 2023 Sep 14;15(18):3979. https://doi.org/10.3390/nu15183979. PMID: 37764763
- Gotelli E, Soldano S, Hysa E, et al. Understanding the immune-endocrine effects of vitamin D in SARS-CoV-2 infection: a role in protecting against neurodamage? Neuroimmunomodulation. 2023 Aug 9. https://doi.org/10.1159/000533286. Online ahead of print. PMID: 37557090
- Harkous D, Ghorayeb N, Gannagé-Yared MH. Prevalence and predictors of vitamin D deficiency in Lebanon: 2016-2022, before and during the COVID-19 outbreak. Endocrine. 2023 Aug 19. https://doi.org/10.1007/s12020-023-03483-8. Online ahead of print. PMID: 37597096
- Jastrzębska J, Skalska M, Radzimiński Ł, et al. Can the supplementation of vitamin D, sun exposure, and isolation during the COVID-19 pandemic affect

the seasonal concentration of 25(OH) D and selected blood parameters among young soccer players in a one-year training season? J Int Soc Sports Nutr. 2023 Dec;20(1):2206802. https://doi.org/10.1080/15502783.2023.2206802. PMID: 37132382

- Kofahi HM, Badran BR, Nimer RM, et al. Exploring the Effects of Vitamin D and Vitamin A Levels on the Response to COVID-19 Vaccine. Vaccines (Basel). 2023 Sep 21;11(9):1509. https://doi.org/10.3390/vaccines11091509. PMID: 37766185

- Konikowska K, Kiliś-Pstrusińska K, Matera-Witkiewicz A, et al. Association of serum vitamin D concentration with the final course of hospitalization in patients with COVID-19. Front Immunol. 2023 Sep 1;14:1231813. https://doi.org/10.3389/fimmu.2023.1231813. eCollection 2023. PMID: 37727794

- Meng J, Li X, Liu W, et al. The role of vitamin D in the prevention and treatment of SARS-CoV-2 infection: A meta-analysis of randomized controlled trials. Clin Nutr. 2023 Nov;42(11):2198-2206. https://doi.org/10.1016/j.clnu.2023.09.008. Epub 2023 Sep 20. PMID: 37802017

- Meyers E, De Smet E, Vercruysse H, et al. No Significant Association between 25-OH Vitamin D Status and SARS-CoV-2 Antibody Response after COVID-19 Vaccination in Nursing Home Residents and Staff. Vaccines (Basel). 2023 Aug 8;11(8):1343. https://doi.org/10.3390/vaccines11081343. PMID: 37631911

- Neira Álvarez M, Navarro Jiménez G, Anguita Sánchez N, et al. Vitamin D deficiency and SARS-CoV-2 infection: A retrospective case-Control study with big-data analysis covering March 2020 to March 2021. PLoS One. 2023 Sep 8;18(9):e0277388. https://doi.org/10.1371/journal.pone.0277388. eCollection 2023. PMID: 37682843

- Nicolae M, Mihai CM, Chisnoiu T, et al. Immunomodulatory Effects of Vitamin D in Respiratory Tract Infections and COVID-19 in Children. Nutrients. 2023 Aug 2;15(15):3430. https://doi.org/10.3390/nu15153430. PMID: 37571367

- O'Sullivan M, Moran C, Griffin TP, et al. Impact of the COVID-19 lockdown on the vitamin D status of people in the West of Ireland. Ir J Med Sci. 2023 Oct 21. https://doi.org/10.1007/s11845-023-03543-y. Online ahead of print. PMID: 37864675

- Ogasawara T, Tajima Y, Nakamura N, et al. The effect of 1-hydroxy-vitamin D treatment in hospitalized patients with COVID-19: A retrospective study. Clin Nutr. 2023 Oct;42(10):2045-2050. https://doi.org/10.1016/j.clnu.2023.08.021. Epub 2023 Sep 1. PMID: 37677909

- 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

- Peng D, Gao Y, Liu Z, et al. Interactive effect of booster vaccination and vitamin D status on antibody production of Omicron variant-infected adults: A real-world cohort study. Clin Respir J. 2023 Oct;17(10):1067-1076. https://doi.org/10.1111/crj.13694. Epub 2023 Sep 7. PMID: 37675825

- Qiu Y, Bao W, Tian X, et al. Vitamin D status in hospitalized COVID-19 patients is associated with disease severity and IL-5 production. Virol J. 2023 Sep 13;20(1):212. https://doi.org/10.1186/s12985-023-02165-1. PMID: 37705107

- Singh SK, Singh S, Kumar R, et al. Influence of Vitamin D level on inflammatory and prognostic markers in COVID-19 - A retrospective study. Recent Adv Food Nutr Agric. 2023 Aug 8. https://doi.org/10.2174/2772574X14666230808095649. Online ahead of print. PMID: 37559534

- Sîrbu AC, Sabin O, Bocșan IC, et al. The Effect of Vitamin D Supplementation on the Length of Hospitalisation, Intensive Care Unit Admission, and Mortality in COVID-19-A Systematic Review and Meta-Analysis. Nutrients. 2023 Aug 5;15(15):3470. https://doi.org/10.3390/nu15153470. PMID: 37571407

- Sposito F, Pennington SH, David CAW, et al. Age-differential CD13 and interferon expression in airway epithelia affect SARS-CoV-2 infection - Effects of vitamin D. Mucosal Immunol. 2023 Sep 1:S1933-0219(23)00064-8. https://doi.org/10.1016/j.mucimm.2023.08.002. Online ahead of print. PMID: 37574128

- Vičič V, Pandel Mikuš R. Zdr Varst. Vitamin D Supplementation During COVID-19 Lockdown and After 20 Months: Follow-Up Study on Slovenian Women Aged Between 44 and 66. 2023 Oct 4;62(4):182-189. https://doi.org/10.2478/sjph-2023-0026. eCollection 2023 Dec. PMID: 37799414

- Zúñiga González M, Roco-Videla Á. [Hip fracture in older adults during pandemic and vitamin D effect]. Nutr Hosp. 2023 Aug 28;40(4):900-901. https://doi.org/10.20960/nh.04688. PMID: 37334788

DERMATOLOGY

- Al-Smadi K, Ali M, Alavi SE, et al. Using a Topical Formulation of Vitamin D for the Treatment of Vitiligo: A Systematic Review. Cells. 2023 Sep 30;12(19):2387. https://doi.org/10.3390/cells12192387. PMID: 37830601

- Chamli A, Souissi A, Frioui R, et al. Hereditary vitamin D-resistant rickets associated with alopecia and epidermal cysts. Int J Rheum Dis. 2023 Sep;26(9):1835-1837. https://doi.org/10.1111/1756-185X.14679. Epub 2023 Apr 1. PMID: 37002879

- Chen Q, Tao Q, Zhu Q, et al. Association Between Trichoscopic Features and Serum Hormone Levels and Vitamin D Concentration in Patients with Androgenetic Alopecia in Eastern China: A Cross-Sectional Study. Clin Cosmet Investig Dermatol. 2023 Sep 19;16:2547-2555. https://doi.org/10.2147/CCID.S423177. eCollection 2023. PMID: 37745276

- Çiçek F, Köle MT. Evaluation of the Impact of Serum Vitamin D Levels on the Scoring Atopic Dermatitis Index in Pediatric Atopic Dermatitis. Children (Basel). 2023 Sep 7;10(9):1522. https://doi.org/10.3390/children10091522. PMID: 37761483

- Dawoud NM, Rajab AZ, El-Hefnawy SM, et al. Serum brain-derived neurotrophic factor and vitamin D: Two concordant players controlling depression among alopecia areata and vitiligo patients: A case-control study. J Cosmet Dermatol. 2023 Aug;22(8):2343-2351. https://doi.org/10.1111/jocd.15725. Epub 2023 Mar 31. PMID: 36999446

- Družijanić A, Cigić L, Glavina A, et al. Serum Concentration of Vitamin D in Patients with Oral Lichen Planus. Acta Stomatol Cro-

at. 2023 Sep;57(3):265-272. https://doi.org/10.15644/asc57/3/7. PMID: 37808408

- 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 Sep-Oct;31(5):563-575. https://doi.org/10.1111/wrr.13109. Epub 2023 Jul 27. PMID: 37458255

- Hidayati AN, Sawitri S, Sari DW, et al. Efficacy of vitamin D supplementation on the severity of atopic dermatitis in children: A systematic review and meta-analysis. F1000Res. 2023 Sep 25;11:274. https://doi.org/10.12688/f1000research.106957.2. eCollection 2022. PMID: 37829249

- Kim JC, Kim HR, Park JS, et al. Vitamin D supplementation can enhance therapeutic effects of excimer laser in patients with vitiligo. J Cosmet Dermatol. 2023 Oct 21. https://doi.org/10.1111/jocd.16043. Online ahead of print. PMID: 37864402

- Koç Yıldırım S, Najafova T, Ersoy Evans S, et al. Serum vitamin D levels and vitamin D receptor gene ApaI and TaqI polymorphisms in patients with morphea: a case-control study. Arch Dermatol Res. 2023 Sep;315(7):2119-2127. https://doi.org/10.1007/s00403-023-02612-7. Epub 2023 Mar 24. PMID: 36964246

- 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 Sep;122:110558. https://doi.org/10.1016/j.intimp.2023.110558. Epub 2023 Jun 30. PMID: 37393836

- Mao R, Zhou G, Jing D, et al. Vitamin D Status, Vitamin D Receptor Polymorphisms, and the Risk of Incident Rosacea: Insights from Mendelian Randomization and Cohort Study in the UK Biobank. Nutrients. 2023 Aug 30;15(17):3803. https://doi.org/10.3390/nu15173803. PMID: 37686836

- Mokhtari F, Ganjei Z, Yazdanpanah M, et al. Inverse correlation between vitamin D and CRP levels in alopecia areata: A pilot study. J Cosmet Dermatol. 2023 Nov;22(11):3176-3180. https://doi.org/10.1111/jocd.15994. Epub 2023 Sep 7. PMID: 37674473

- Nguyen CV, Zheng L, Lu KQ. High-dose vitamin D for the management acute radiation dermatitis. JAAD Case Rep. 2023 Jul 8;39:47-50. https://doi.org/10.1016/j.jdcr.2023.07.001. eCollection 2023 Sep. PMID: 37583837

- Näslund-Koch C, Vedel-Krogh S, Bojesen SE, et al. Plasma Vitamin D Is Not Associated with Moderate-to-Severe Psoriasis: Results from Danish General Population Studies. J Invest Dermatol. 2023 Oct;143(10):2068-2071. https://doi.org/10.1016/j.jid.2023.04.004. Epub 2023 Apr 28. PMID: 37121271

- 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 Sep 1;45(9):619-625. https://doi.org/10.1097/DAD.0000000000002507. Epub 2023 Jul 28. PMID: 37506276

- 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 Sep;232:106352. https://doi.org/10.1016/j.jsbmb.2023.106352. Epub 2023 Jun 16. PMID: 37330071

- Romano F, Serpico D, Cantelli M, et al. Osteoporosis and dermatoporosis: a review on the role of vitamin D. Front Endocrinol (Lausanne). 2023 Aug 24;14:1231580. https://doi.org/10.3389/fendo.2023.1231580. eCollection 2023. PMID: 37693364

- Sloan B. This Month in JAAD Case Reports: November 2023 - High-dose vitamin D and radiation dermatitis. J Am Acad Dermatol. 2023 Nov;89(5):907. https://doi.org/10.1016/j.jaad.2023.08.079. Epub 2023 Sep 4. PMID: 37666425

- Slominski AT, Tuckey RC, Jetten AM, et al. Recent Advances in Vitamin D Biology: Something New under the Sun. J Invest Dermatol. 2023 Oct 3:S0022-202X(23)02426-0. https://doi.org/10.1016/j.jid.2023.07.003. Online ahead of print. PMID: 37791933

- Toker M, Ch'en PY, Rangu S, et al. Vitamin D deficiency may be associated with severity of hidradenitis suppurativa: a retrospective cohort analysis of a racially and ethnically diverse patient population. Int J Dermatol. 2023 Sep 12. https://doi.org/10.1111/ijd.16833. Online ahead of print. PMID: 37697952

- Wang M, Yan Y, Wang BX. [Research progress of vitamin D in inflammatory skin disease]. Zhonghua Yu Fang Yi Xue Za Zhi. 2023 Sep 6;57(9):1497-1503. https://doi.org/10.3760/cma.j.cn112150-20221021-01022. PMID: 37743314

ENDOCRINOLOGY

- Ahmed A, Saleem MA, Saeed F, et al. A comprehensive review on the impact of calcium and vitamin D insufficiency and allied metabolic disorders in females. Food Sci Nutr. 2023 Jul 26;11(9):5004-5027. https://doi.org/10.1002/fsn3.3519. eCollection 2023 Sep. PMID: 37701195

- Al-Oanzi ZH, Elzouki AN. Editorial: The role of vitamin D in reducing the risk of metabolic syndromes. Front Endocrinol (Lausanne). 2023 Oct 2;14:1293262. https://doi.org/10.3389/fendo.2023.1293262. eCollection 2023. PMID: 37850095

- Alam F, Khan AH, Baig M, et al. Editorial: Recent advances in vitamin D supplementation for improved reproductive endocrine and metabolic parameters. Front Endocrinol (Lausanne). 2023 Aug 18;14:1251388. https://doi.org/10.3389/fendo.2023.1251388. eCollection 2023. PMID: 37664848

- Al Kiyumi M. Letter to the editor: Vitamin D levels and diabetic foot ulcers: Is there an association? Int Wound J. 2023 Nov;20(9):3922-3923. https://doi.org/10.1111/iwj.14234. Epub 2023 May 14. PMID: 37182842

- Atoum MF, Al Shdaifat A, Al Hourani H, et al. Relationship of Serum Vitamin D Levels With Diabetic Foot in Patients With Type 2 Diabetes Mellitus: A Cross-Sectional Study. Int J Low Extrem Wounds. 2023 Oct 4:15347346231205641. https://doi.org/10.1177/15347346231205641. Online ahead of print. PMID: 37792565

- Begga A, Mehaoudi RI, Ghozlani A, et al. The risk of metabolic syndrome is associated with vitamin D and inflammatory status in premenopausal and postmenopausal Algerian women. Ir J Med Sci. 2023 Sep 13. https://doi.org/10.1007/s11845-023-03516-1. Online ahead of print. PMID: 37702977

- Blank RD. Does Vitamin D 1α Hydroxylase Activity in Osteoblasts Contribute Meaningfully to Abaloparatide's Therapeutic Action? Endocrinology. 2023 Sep

23;164(11):bqad138. https://doi.org/10.1210/endocr/bqad138. PMID: 37698239

- Boughanem H, Ruiz-Limón P, Pilo J, et al. Linking serum vitamin D levels with gut microbiota after 1-year lifestyle intervention with Mediterranean diet in patients with obesity and metabolic syndrome: a nested cross-sectional and prospective study. Gut Microbes. 2023 Dec;15(2):2249150. https://doi.org/10.1080/19490976.2023.2249150. PMID: 37647262

- Cheng YL, Lee TI, Chien YM, et al. Vitamin D level regulates serum lipids discrepantly in adults with and without dyslipidemia. Endocr Connect. 2023 Aug 2;12(9):e230013. https://doi.org/10.1530/EC-23-0013. PMID: 37410091

- Chen S, Yang W, Guo Z, et al. Association between serum vitamin D levels and sensitivity to thyroid hormone indices: a cross-sectional observational study in NHANES 2007-2012. Front Endocrinol (Lausanne). 2023 Sep 5;14:1243999. https://doi.org/10.3389/fendo.2023.1243999. eCollection 2023. PMID: 37745711

- Cipriani C, Cianferotti L. Vitamin D in hypoparathyroidism: insight into pathophysiology and perspectives in clinical practice. Endocrine. 2023 Aug;81(2):216-222. https://doi.org/10.1007/s12020-023-03354-2. Epub 2023 Mar 31. PMID: 37000405

- Cominacini M, Fumaneri A, Ballerini L, et al. Unraveling the Connection: Visceral Adipose Tissue and Vitamin D Levels in Obesity. Nutrients. 2023 Oct 5;15(19):4259. https://doi.org/10.3390/nu15194259. PMID: 37836543

- Costa-Guda J, Corrado K, Bellizzi J, et al. Influence of Vitamin D Deficiency on Cyclin D1-Induced Parathyroid Tumorigenesis. Endocrinology. 2023 Sep 23;164(11):bqad137. https://doi.org/10.1210/endocr/bqad137. PMID: 37694586

- Dugani P, Sharma PV, Krishna SM, et al. Serum Parathyroid Hormone and Vitamin D Levels as Predictors of Hypocalcemia after Total/ Near Total Thyroidectomy. Indian J Otolaryngol Head Neck Surg. 2023 Sep;75(3):1502-1510. https://doi.org/10.1007/s12070-023-03599-3. Epub 2023 Mar 3. PMID: 37636752

- 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 Sep;9(5):2070-2077. https://doi.org/10.1002/vms3.1198. Epub 2023 Jul 19. PMID: 37466035

- Gao YX, Kou C. The Associations of Vitamin D Level with Metabolic Syndrome and Its Components Among Adult Population: Evidence from National Health and Nutrition Examination Survey 2017-2018. Metab Syndr Relat Disord. 2023 Oct 16. https://doi.org/10.1089/met.2023.0141. Online ahead of print. PMID: 37843920

- Giustina A, di Filippo L, Facciorusso A, et al. Vitamin D status and supplementation before and after Bariatric Surgery: Recommendations based on a systematic review and meta-analysis. Rev Endocr Metab Disord. 2023 Sep 4. https://doi.org/10.1007/s11154-023-09831-3. Online ahead of print. PMID: 37665480

- Gong M, Wang K, Sun H, et al. Threshold of 25(OH)D and consequently adjusted parathyroid hormone reference intervals: data mining for relationship between vitamin D and parathyroid hormone. J Endocrinol Invest. 2023 Oct;46(10):2067-2077. https://doi.org/10.1007/s40618-023-02057-9. Epub 2023 Mar 15. PMID: 36920734

- Grove-Laugesen D, Ebbehoj E, Watt T, et al. Effect of Vitamin D Supplementation on Graves' Disease: The DAGMAR Trial. Thyroid. 2023 Sep;33(9):1110-1118. https://doi.org/10.1089/thy.2023.0111. Epub 2023 Jun 26. PMID: 37218433

- Halschou-Jensen PM, Sauer J, Bouchelouche P, et al. Improved Healing of Diabetic Foot Ulcers After High-dose Vitamin D: A Randomized Double-blinded Clinical Trial. Int J Low Extrem Wounds. 2023 Sep;22(3):466-474. https://doi.org/10.1177/15347346211020268. Epub 2021 Jul 2. PMID: 34213957

- 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 Oct;14(10):1192-1201. https://doi.org/10.1111/jdi.14048. Epub 2023 Jul 2. PMID: 37394883

- Hands JM, Patrick R, Frame LA. Vitamin D and Risk for Type 2 Diabetes in People With Prediabetes. Ann Intern Med. 2023 Aug;176(8):eL230201. https://doi.org/10.7326/L23-0201. PMID: 37579336

- Hao L, Lu A, Gao H, et al. The Effects of Vitamin D on Markers of Glucose and Obesity in Postmenopausal Women: A Meta-analysis of Randomized Controlled Trials. Clin Ther. 2023 Sep;45(9):913-920. https://doi.org/10.1016/j.clinthera.2023.07.009. Epub 2023 Aug 17. PMID: 37598056

- Hassan AB, Al-Dosky AHA. Vitamin D status and its association with inflammatory markers among Kurdish type 2 diabetic patients with painful diabetic peripheral neuropathy. Steroids. 2023 Nov;199:109289. https://doi.org/10.1016/j.steroids.2023.109289. Epub 2023 Aug 10. PMID: 37572783

- Holt R, Jorsal MJ, Yahyavi SK, et al. High-dose cholecalciferol supplementation to obese infertile men is sufficient to reach adequate vitamin D status. Br J Nutr. 2023 Oct 9:1-16. https://doi.org/10.1017/S0007114523002222. Online ahead of print. PMID: 37811573

- Hoseini Z, Behpour N, Hoseini R. Vitamin D improves the antidiabetic effectiveness of aerobic training via modulation of Akt, PEPCK, and G6Pase expression. Diabetol Metab Syndr. 2023 Sep 9;15(1):184. https://doi.org/10.1186/s13098-023-01158-y. PMID: 37689713

- 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

- Hsu YT, Lin JY, Lin CJ, et al. Association of Possible Sarcopenia or Sarcopenia with Body Composition, Nutritional Intakes, Serum Vitamin D Levels, and Physical Activity among Patients with Type 2 Diabetes Mellitus in Taiwan. Nutrients. 2023 Sep 7;15(18):3892. https://doi.org/10.3390/nu15183892. PMID: 37764676

- Huang X, Yang Y, Jiang Y, et al. Association between vitamin D deficiency and lipid

profiles in overweight and obese adults: a systematic review and meta-analysis. BMC Public Health. 2023 Aug 29;23(1):1653. https://doi.org/10.1186/s12889-023-16447-4. PMID: 37644450

- 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 Sep;118(3):697-707. https://doi.org/10.1016/j.ajcnut.2023.07.012. Epub 2023 Jul 18. PMID: 37467897
- Lanzolla G, Di Matteo L, Comi S, et al. Absence of a relationship between vitamin D and Graves' orbitopathy. J Endocrinol Invest. 2023 Aug;46(8):1717-1721. https://doi.org/10.1007/s40618-023-02017-3. Epub 2023 Jan 25. PMID: 36696067
- Li Y, Sun J, Jiao Y, et al. Impaired sensitivity to thyroid hormones is associated with decreased vitamin D levels in the euthyroid population. J Clin Endocrinol Metab. 2023 Oct 13:dgad607. https://doi.org/10.1210/clinem/dgad607. Online ahead of print. PMID: 37831130
- Mahat RK, Rathore V. Comment on Xiang et al. Association between the Triglyceride-Glucose Index and Vitamin D Status in Type 2 Diabetes Mellitus. Nutrients 2023, 15, 639. Nutrients. 2023 Sep 20;15(18):4068. https://doi.org/10.3390/nu15184068. PMID: 37764851
- Mayana Alves Baad V, Chaves Pereira de Holanda N, Fonseca Nogueira Alves J, et al. Vitamin D Concentration Changes after Bariatric Surgery. J Obes. 2023 Sep 20;2023:4828052. https://doi.org/10.1155/2023/4828052. eCollection 2023. PMID: 37771449
- 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
- Monson NR, Klair N, Patel U, et al. Association Between Vitamin D Deficiency and Testosterone Levels in Adult Males: A Systematic Review. Cureus. 2023 Sep 24;15(9):e45856. https://doi.org/10.7759/cureus.45856. eCollection 2023 Sep. PMID: 37750061
- Mousa H, Al Saei A, Razali RM, et al. Vitamin D status affects proteomic profile of HDL associated proteins and inflammatory mediators in dyslipidemia. J Nutr Biochem. 2023 Oct 18:109472. https://doi.org/10.1016/j.jnutbio.2023.109472. Online ahead of print. PMID: 37863441
- Navaei S, Nazemi S, Emamian MH, et al. Vitamin D deficiency and diabetic retinopathy risk. J Fr Ophtalmol. 2023 Sep;46(7):737-741. https://doi.org/10.1016/j.jfo.2023.01.024. Epub 2023 Apr 19. PMID: 37085359
- 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 Nov;33(11):2269-2279. https://doi.org/10.1016/j.numecd.2023.06.017. Epub 2023 Jun 24. PMID: 37543521
- 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 Oct;39(7):e3679. https://doi.org/10.1002/dmrr.3679. Epub 2023 Jun 20. PMID: 37337761
- Payet T, Valmori M, Astier J, et al. Vitamin D Modulates Lipid Composition of Adipocyte-Derived Extracellular Vesicles Under Inflammatory Conditions. Mol Nutr Food Res. 2023 Sep 15:e2300374. https://doi.org/10.1002/mnfr.202300374. Online ahead of print. PMID: 37712099
- Pittas AG, Kawahara T, Jorde R, et al. Vitamin D and Risk for Type 2 Diabetes in People With Prediabetes. Ann Intern Med. 2023 Aug;176(8):eL230202. https://doi.org/10.7326/L23-0202. PMID: 37579334
- Priyanto MH, Legiawati L, Saldi SRF, et al. Comparison of vitamin D levels in diabetes mellitus patients with and without diabetic foot ulcers: An analytical observational study in Jakarta, Indonesia. Int Wound J. 2023 Aug;20(6):2028-2036. https://doi.org/10.1111/iwj.14066. Epub 2023 Jan 17. PMID: 36647686
- Radkhah N, Zarezadeh M, Jamilian P, et al. The Effect of Vitamin D Supplementation on Lipid Profiles: an Umbrella Review of Meta-Analyses. Adv Nutr. 2023 Aug 30:S2161-8313(23)01362-5. https://doi.org/10.1016/j.advnut.2023.08.012. Online ahead of print. PMID: 37657652
- Rushan Z, Kumar S. Letter to editor: Effect of obesity on fragility fractures, BMD and vitamin D levels in postmenopausal women. Influence of type 2 diabetes mellitus. Acta Diabetol. 2023 Nov;60(11):1595-1596. https://doi.org/10.1007/s00592-023-02156-2. Epub 2023 Aug 28. PMID: 37640798
- Saito T, Mizobuchi M, Sakai M, et al. Effects of evocalcet on parathyroid calcium-sensing receptor and vitamin D receptor expression in uremic rats. FASEB J. 2023 Aug;37(8):e23094. https://doi.org/10.1096/fj.202300209R. PMID: 37462513
- Santos LZAA, Menezes-Júnior LAA, Freitas SN, et al. Vitamin D deficiency and hyperglycemia in male rotating shift workers: A disturbed circadian rhythms influence. Clin Nutr ESPEN. 2023 Oct;57:258-265. https://doi.org/10.1016/j.clnesp.2023.06.031. Epub 2023 Jul 3. PMID: 37739666
- Seyyar SA, Tıskaoğlu NS, Onder Tokuc E, et al. Is serum vitamin D associated with diabetic retinopathy and its severity or with diabetes itself ? Clin Exp Optom. 2023 Aug;106(6):612-618. https://doi.org/10.1080/08164622.2022.2090232. Epub 2022 Jul 3. PMID: 35786311
- Shahidzadeh Yazdi Z, Streeten EA, Whitlatch HB, et al. Vitamin D deficiency increases vulnerability to canagliflozin-induced adverse effects on 1,25-dihydroxyvitamin D and PTH. J Clin Endocrinol Metab. 2023 Sep 20:dgad554. https://doi.org/10.1210/clinem/dgad554. Online ahead of print. PMID: 37738423
- Shao R, Liao X, Wang W, et al. Vitamin D Regulates Glucose Metabolism in Zebrafish (Danio rerio) by Maintaining Intestinal Homeostasis. J Nutr Biochem. 2023 Oct 14:109473. https://doi.org/10.1016/j.jnutbio.2023.109473. Online ahead of print. PMID: 37844767
- Sharifan P, Darroudi S, Rafiee M, et al. The effects of low-fat dairy products fortified with 1500 IU vitamin D3 on serum liver function biomarkers in adults with abdominal obesity: a randomized controlled trial. J Health Popul Nutr. 2023 Sep 25;42(1):102. https://doi.org/10.1186/s41043-023-00401-6. PMID: 37749703

- Sosa-Henríquez M, de Tejada-Romero MJG. Effect of obesity on fragility fractures, BMD and vitamin D levels in postmenopausal women. Influence of type 2 diabetes mellitus. Acta Diabetol. 2023 Nov;60(11):1597. https://doi.org/10.1007/s00592-023-02161-5. Epub 2023 Aug 3. PMID: 37537280
- Soto-Pedre E, Lin YY, Soto-Hernaez J, et al. Morbidity Associated With Primary Hyperparathyroidism-A Population-based Study With a Subanalysis on Vitamin D. J Clin Endocrinol Metab. 2023 Aug 18;108(9):e842-e849. https://doi.org/10.1210/clinem/dgad103. PMID: 36810667
- 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
- Tabanera JAV, Gómez J, Brabyn P, et al. Does Vitamin D Deficiency Really Increase the Risk of Post-surgical Hypoparathyroidism? Indian J Otolaryngol Head Neck Surg. 2023 Sep;75(3):1719-1723. https://doi.org/10.1007/s12070-023-03699-0. Epub 2023 Mar 29. PMID: 37636802
- Taderegew MM, Woldeamanuel GG, Wondie A, et al. Vitamin D deficiency and its associated factors among patients with type 2 diabetes mellitus: a systematic review and meta-analysis. BMJ Open. 2023 Oct 5;13(10):e075607. https://doi.org/10.1136/bmjopen-2023-075607. PMID: 37798019
- Tarfeen N, Nisa KU, Ahmad MB, et al. Metabolic and Genetic Association of Vitamin D with Calcium Signaling and Insulin Resistance. Indian J Clin Biochem. 2023 Oct;38(4):407-417. https://doi.org/10.1007/s12291-022-01105-0. Epub 2022 Dec 10. PMID: 37746541
- Thirunavukkarasu R, Chitra A, Asirvatham A, et al. Association of Vitamin D Deficiency and Vitamin D Receptor Gene Polymorphisms with Type 1 Diabetes Risk: A South Indian Familial Study. J Clin Res Pediatr Endocrinol. 2023 Aug 10. https://doi.org/10.4274/jcrpe.galenos.2023.2023-12-7. Online ahead of print. PMID: 37559366
- Tougaard NH, Hansen TW, Rossing P. Vitamin D deficiency and development of complications in individuals with type 1 and type 2 diabetes: A cohort study. J Diabetes Complications. 2023 Oct;37(10):108611. https://doi.org/10.1016/j.jdiacomp.2023.108611. Epub 2023 Sep 6. PMID: 37716257
- Upadhyay PK, Thakur N, Vishwakarma VK, et al. Role of vitamin D in management of diabetes and unresolved cardiovascular diseases. Curr Diabetes Rev. 2023 Sep 1. https://doi.org/10.2174/1573399820666230901151019. Online ahead of print. PMID: 37680158
- Vale G, Cardoso L, Francisco T. A severe presentation of vitamin D-dependent hypocalcemic rickets associated with hypophosphatemia. J Bras Nefrol. 2023 Oct 6:S0101-28002023005033502. https://doi.org/10.1590/2175-8239-JBN-2023-0044en. Online ahead of print. PMID: 37815431
- Waterhouse M, Pham H, Rahman ST, et al. The Effect of Vitamin D Supplementation on Hypothyroidism in the Randomized Controlled D-Health Trial. Thyroid. 2023 Oct 5. https://doi.org/10.1089/thy.2023.0317. Online ahead of print. PMID: 37698908
- 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 Nov;150:104574. https://doi.org/10.1016/j.mvr.2023.104574. Epub 2023 Jun 28. PMID: 37390963
- Xiang Q, Xu H, Zhan J, et al. Reply to Mahat, R.K.; Rathore, V. Comment on "Xiang et al. Association between the Triglyceride-Glucose Index and Vitamin D Status in Type 2 Diabetes Mellitus. Nutrients 2023, 15, 639". Nutrients. 2023 Sep 20;15(18):4069. https://doi.org/10.3390/nu15184069. PMID: 37764852
- Yang F, Wang M, Du J, et al. Predicting life span of type 2 diabetes patients through alkaline phosphatase and vitamin D: Results from NHANES 1999-2018. Atherosclerosis. 2023 Oct 5:117318. https://doi.org/10.1016/j.atherosclerosis.2023.117318. Online ahead of print. PMID: 37839936
- Zha K, Wang N, Zhou Y, et al. Novel Associations of Dyslipidaemia with Vitamin D and Bone Metabolism in Elderly Patients with Diabetes: A Cross-Sectional Study. Diabetes Metab Syndr Obes. 2023 Sep 22;16:2939-2950. https://doi.org/10.2147/DMSO.S423287. eCollection 2023. PMID: 37771466
- Zhang QW, Wang Y, Tong ZY, et al. Vitamin D May Play a Vital Role in Alleviating Type 2 Diabetes Mellitus by Modulating the Ferroptosis Signaling Pathway. Horm Metab Res. 2023 Aug 1. https://doi.org/10.1055/a-2122-5701. Online ahead of print. PMID: 37402397
- Zhen R, Ban J, Jia Z, et al. The Relationship Between Non-HDL-C /HDL-C Ratio (NHHR) and Vitamin D in Type 2 Diabetes Mellitus. Diabetes Metab Syndr Obes. 2023 Aug 31;16:2661-2673. https://doi.org/10.2147/DMSO.S414673. eCollection 2023. PMID: 37670851
- Zhong P, Zhu Z, Wang Y, et al. Cardiovascular and microvascular outcomes according to vitamin D level and genetic variants among individuals with prediabetes: a prospective study. J Transl Med. 2023 Oct 16;21(1):724. https://doi.org/10.1186/s12967-023-04557-x. PMID: 37845735
- Zhou L, Wang Y, Su J, et al. Vitamin D Deficiency Is Associated with Impaired Sensitivity to Thyroid Hormones in Euthyroid Adults. Nutrients. 2023 Aug 24;15(17):3697. https://doi.org/10.3390/nu15173697. PMID: 37686729

EPIDEMIOLOGY

- Aghapour B, Kheirouri S, Alizadeh M, et al. Vitamin D deficiency prevention policies in Iran: a retrospective policy analysis. Front Nutr. 2023 Aug 23;10:1249402. https://doi.org/10.3389/fnut.2023.1249402. eCollection 2023. PMID: 37680901
- Asghari G, Yuzbashian E, Najd-Hassan-Bonab L, et al. Association of rs2282679 polymorphism in vitamin D binding protein gene (GC) with the risk of vitamin D deficiency in an iranian population: season-specific vitamin D status. BMC Endocr Disord. 2023 Oct 10;23(1):217. https://doi.org/10.1186/s12902-023-01463-7. PMID: 37814286
- Aslam K, Anjum I, Aslam K, et al. Genetic susceptibility of vitamin D receptor gene polymorphisms on autosomal recessive primary microcephaly patients in Pakistani population: a case-control and in-silico study. Mol Biol Rep. 2023 Oct;50(10):8049-8059.

https://doi.org/10.1007/s11033-023-08681-1. Epub 2023 Aug 4. PMID: 37541996

- Caso G, Grønhøj A, Vecchio R, et al. Senior citizens' vitamin D supplements intake: evidence from Denmark. J Sci Food Agric. 2023 Oct;103(13):6233-6242. https://doi.org/10.1002/jsfa.12693. Epub 2023 May 18. PMID: 37148153
- Dunlop E, Pham NM, Van Hoang D, et al. Vitamin D status in healthy populations worldwide: a systematic review protocol. JBI Evid Synth. 2023 Sep 1;21(9):1888-1895. https://doi.org/10.11124/JBIES-22-00354. PMID: 37014734
- 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 Aug 28;40(4):732-738. https://doi.org/10.20960/nh.04580. PMID: 37409711
- Greenwood A, von Hurst PR, Beck KL, et al. Relationship between vitamin D, iron, and hepcidin in premenopausal females, potentially confounded by ethnicity. Eur J Nutr. 2023 Aug 29. https://doi.org/10.1007/s00394-023-03240-7. Online ahead of print. PMID: 37642748
- Haghighat N, Sohrabi Z, Bagheri R, et al. A systematic review and meta-analysis of vitamin D status of patients with severe obesity in various regions worldwide. Obes Facts. 2023 Aug 28. https://doi.org/10.1159/000533828. Online ahead of print. PMID: 37640022
- Haitchi S, Moliterno P, Widhalm K. Prevalence of vitamin D deficiency in seniors - A retrospective study. Clin Nutr ESPEN. 2023 Oct;57:691-696. https://doi.org/10.1016/j.clnesp.2023.07.005. Epub 2023 Jul 26. PMID: 37739724
- Hendi NN, Al-Sarraj Y, Ismail Umlai UK, et al. Genetic determinants of Vitamin D deficiency in the Middle Eastern Qatari population: a genome-wide association study. Front Nutr. 2023 Sep 29;10:1242257. https://doi.org/10.3389/fnut.2023.1242257. eCollection 2023. PMID: 37841410
- 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 Sep;50(9):1167-1175. https://doi.org/10.1111/jcpe.13834. Epub 2023 Jun 15. PMID: 37317881
- Judprasong K, Chheng S, Chimkerd C, et al. Effect of Ultraviolet Irradiation on Vitamin D in Commonly Consumed Mushrooms in Thailand. Foods. 2023 Sep 30;12(19):3632. https://doi.org/10.3390/foods12193632. PMID: 37835285
- Kerlikowsky F, Schuchardt JP, Hahn A. Folate, vitamin B12 and vitamin D status in healthy and active home-dwelling people over 70 years. BMC Geriatr. 2023 Oct 18;23(1):673. https://doi.org/10.1186/s12877-023-04391-2. PMID: 37853337
- 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 Nov;34(11):1837-1850. https://doi.org/10.1007/s00198-023-06841-4. Epub 2023 Jul 11. 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 Nov;34(11):1851-1852. https://doi.org/10.1007/s00198-023-06865-w. 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
- Mendes MM, Gomes APO, Araújo MM, et al. Prevalence of vitamin D deficiency in South America: a systematic review and meta-analysis. Nutr Rev. 2023 Sep 11;81(10):1290-1309. https://doi.org/10.1093/nutrit/nuad010. PMID: 36882047
- Scully H, Laird EJ, Healy M, et al. Vitamin D: determinants of status, indications for testing and knowledge in a convenience sample of Irish adults. Br J Nutr. 2023 Oct 14;130(7):1144-1154. https://doi.org/10.1017/S0007114523000168. Epub 2023 Feb 9. PMID: 37675548
- Shaban NZ, Abdel-Alnaby M, Atta MN, et al. The association between body mass index elevation and differentiation in vitamin D receptor gene expression, genetic polymorphism, and oxidative stress in adult Egyptian individuals. Sci Rep. 2023 Oct 17;13(1):17696. https://doi.org/10.1038/s41598-023-44607-4. PMID: 37848505
- Tanna NK, Karki M, Webber I, et al. Knowledge, attitudes, and practices associated with vitamin D supplementation: A cross-sectional online community survey of adults in the UK. PLoS One. 2023 Aug 7;18(8):e0281172. https://doi.org/10.1371/journal.pone.0281172. eCollection 2023. PMID: 37549145

GASTROENTEROLOGY

- [No authors listed] Corrigendum to Oral vitamin D supplementation on the prevention of peritoneal dialysis-related peritonitis: A pilot randomised controlled trial. Perit Dial Int. 2023 Aug 11:8968608231195508. https://doi.org/10.1177/08968608231195508. Online ahead of print. PMID: 37565761
- Abdelrahman BA, El-Khatib AS, Attia YM. Insights into the role of vitamin D in targeting the culprits of non-alcoholic fatty liver disease. Life Sci. 2023 Nov 1;332:122124. https://doi.org/10.1016/j.lfs.2023.122124. Epub 2023 Sep 22. PMID: 37742738
- Cao Y, Chan AT. Vitamin D and Early-Onset Colorectal Cancer-Rays of Hope? Gastroenterology. 2023 Oct;165(4):831-833. https://doi.org/10.1053/j.gastro.2023.08.002. Epub 2023 Aug 6. PMID: 37544414
- 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 Nov;149(14):13155-13162. https://doi.org/10.1007/s00432-023-05140-z. Epub 2023 Jul 21. PMID: 37479757
- Chen X, Zhao Y, Zhang R, et al. The effect of vitamin D supplementation on some metabolic parameters in patients with nonalcoholic fatty liver disease: A systematic review and meta-analysis of 8 RCTs. Medicine (Baltimore). 2023 Oct 20;102(42):e35717. https://doi.org/10.1097/MD.0000000000035717. PMID: 37861495

- Das DS, Saharia GK, Panigrahi MK, et al. Association of vitamin D and functional dyspepsia: a case-control study. Ann Med Surg (Lond). 2023 Aug 16;85(10):4667-4673. https://doi.org/10.1097/MS9.0000000000001204. eCollection 2023 Oct. PMID: 37811112

- Erarslan AS, Ozmerdivenli R, Sirinyıldız F, et al. Therapeutic and prophylactic role of vitamin D and curcumin in acetic acid-induced acute ulcerative colitis model. Toxicol Mech Methods. 2023 Nov;33(6):480-489. https://doi.org/10.1080/15376516.2023.2187729. Epub 2023 Apr 2. PMID: 36872571

- Gao Z, Liang Y, Huang S, et al. Prevalence and associated factors of vitamin D deficiency after Roux-en-Y gastric bypass: A systematic review and meta-analysis. Int J Surg. 2023 Sep 22. https://doi.org/10.1097/JS9.0000000000000732. Online ahead of print. PMID: 37738003

- Grover I, Singh N, Gunjan D, et al. Vitamin D status & bone health in patients with liver cirrhosis. Indian J Med Res. 2023 Sep;158(3):284-291. https://doi.org/10.4103/ijmr.IJMR_1144_20. PMID: 37815065

- Ji Y, Wei CB, Gu W, et al. Relevance of vitamin D on NAFLD and liver fibrosis detected by vibration controlled transient elastography in US adults: a cross-sectional analysis of NHANES 2017-2018. Ann Med. 2023 Dec;55(1):2209335. https://doi.org/10.1080/07853890.2023.2209335. PMID: 37155562

- Jiang R, Zhou Y, Han L, et al. Serum vitamin D is associated with ultrasound-defined hepatic fibrosis. Clin Res Hepatol Gastroenterol. 2023 Oct 20;47(10):102228. https://doi.org/10.1016/j.clinre.2023.102228. Online ahead of print. PMID: 37865224

- Lee D, Kim S, Koo Y, et al. Expression of vitamin D receptor, CYP24A1, and CYP27B1 in normal and inflamed canine pancreases. Front Vet Sci. 2023 Sep 21;10:1265203. https://doi.org/10.3389/fvets.2023.1265203. eCollection 2023. PMID: 37808100

- 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 Sep-Oct;37(5):1694-1702. https://doi.org/10.1111/jvim.16809. Epub 2023 Jul 26. PMID: 37496238

- 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 Oct;20(8):3015-3022. https://doi.org/10.1111/iwj.14177. Epub 2023 May 16. PMID: 37194326

- Liu J, Song Y, Wang Y, et al. Vitamin D/Vitamin D receptor pathway in nonalcoholic fatty liver disease. Expert Opin Ther Targets. 2023 Oct 20. https://doi.org/10.1080/14728222.2023.2274099. Online ahead of print. PMID: 37861098

- Liu Z, Zhang W, Zhao Z, et al. The Triglyceride-Glucose Index is Associated with Vitamin D Status in Metabolic-Associated Fatty Liver Disease. Diabetes Metab Syndr Obes. 2023 Aug 31;16:2651-2660. https://doi.org/10.2147/DMSO.S421840. eCollection 2023. PMID: 37670850

- 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

- Pérez-Jeldres T, Bustamante ML, Segovia-Melero R, et al. Genotype Prevalence of Lactose Deficiency, Vitamin D Deficiency, and the Vitamin D Receptor in a Chilean Inflammatory Bowel Disease Cohort: Insights from an Observational Study. Int J Mol Sci. 2023 Oct 3;24(19):14866. https://doi.org/10.3390/ijms241914866. PMID: 37834314

- Rastegar-Moghaddam SH, Akbarian M, Rajabian A, et al. Vitamin D alleviates hypothyroidism associated liver dysfunction: Histological and biochemical evidence. Heliyon. 2023 Aug 2;9(8):e18860. https://doi.org/10.1016/j.heliyon.2023.e18860. eCollection 2023 Aug. PMID: 37593614

- Safari-Faramani R, Salehi M, Ghambari Haji Shore S, et al. Serum level of vitamin D in patients with recurrent aphthous stomatitis: A systematic review and meta-analysis of case control studies. Clin Exp Dent Res. 2023 Oct 3. https://doi.org/10.1002/cre2.794. Online ahead of print. PMID: 37786385

- Săsăran MO, Mărginean CO, Lupu A, et al. Vitamin D and Its Association with H. pylori Prevalence and Eradication: A Comprehensive Review. Nutrients. 2023 Aug 11;15(16):3549. https://doi.org/10.3390/nu15163549. PMID: 37630738

- Shibamoto A, Kaji K, Nishimura N, et al. Vitamin D deficiency exacerbates alcohol-related liver injury via gut barrier disruption and hepatic overload of endotoxin. J Nutr Biochem. 2023 Sep 28;122:109450. https://doi.org/10.1016/j.jnutbio.2023.109450. Online ahead of print. PMID: 37777163

- Song X, Zhang H, Wang H, et al. Correlation between Treatment Outcomes and Serum Vitamin D Levels As Well As Infliximab Trough Concentration among Chinese Patients with Crohn's Disease. Gastroenterol Res Pract. 2023 Oct 6;2023:6675401. https://doi.org/10.1155/2023/6675401. eCollection 2023. PMID: 37842203

- Topalova-Dimitrova A, Dimitrov IV, Nikolov R. Lower vitamin D levels are associated with the pathogenesis of inflammatory bowel diseases. Medicine (Baltimore). 2023 Oct 13;102(41):e35505. https://doi.org/10.1097/MD.0000000000035505. PMID: 37832114

- Turk A, Kuloglu T, Karadag A, et al. Effects of Vitamin D on Asprosin Immunoreactivity Against Cyclophosphamide-Induced Liver Injury in Rats. Cureus. 2023 Oct 9;15(10):e46711. https://doi.org/10.7759/cureus.46711. eCollection 2023 Oct. PMID: 37822688

- Wallace C, Gordon M, Sinopoulou V, et al. Vitamin D for the treatment of inflammatory bowel disease. Cochrane Database Syst Rev. 2023 Oct 2;10(10):CD011806. https://doi.org/10.1002/14651858.CD011806.pub2. PMID: 37781953

- Wi YJ, Na SY. [Calcium, Vitamin D, and Colorectal Cancer]. Korean J Gastroenterol. 2023 Aug 25;82(2):47-55. https://doi.org/10.4166/kjg.2023.091. PMID: 37621239

- Xia Y, Zhou J, Zhao HM, et al. [Mechanism of action and exogenous supplementation of vitamin D in Crohn's disease]. Zhongguo Dang Dai Er Ke Za Zhi. 2023 Aug 15;25(8):870-876. https://doi.org/10.7499/j.issn.1008-8830.2212064. PMID: 37668037

- 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
- Yang K, Pan Y, Zhang H, et al. Hepatic vitamin D receptor expression is negatively associated with liver inflammation and fibrosis in patients with chronic HBV infection. Clin Exp Med. 2023 Oct;23(6):2151-2158. https://doi.org/10.1007/s10238-022-00919-9. Epub 2022 Oct 27. PMID: 36289101
- Zhao M, Liu Z, Shi H, et al. Prognostic role of vitamin D receptor in digestive system tumours: A systematic review and preliminary meta-analysis. PLoS One. 2023 Aug 10;18(8):e0289598. https://doi.org/10.1371/journal.pone.0289598. eCollection 2023. PMID: 37561808
- Zheng M, Li H, Gao Y, et al. Vitamin D3 analogue calcipotriol inhibits the profibrotic effects of transforming growth factor-β1 on pancreatic stellate cells. Eur J Pharmacol. 2023 Oct 15;957:176000. https://doi.org/10.1016/j.ejphar.2023.176000. Epub 2023 Aug 19. PMID: 37604222
- Zheng Y, Li ZB, Wu ZY, et al. Vitamin D levels in the assessment of Crohn's disease activity and their relation to nutritional status and inflammation. J Hum Nutr Diet. 2023 Aug;36(4):1159-1169. https://doi.org/10.1111/jhn.13139. Epub 2023 Feb 13. PMID: 36670516
- Zhou MY, Li X, Yang J, et al. Serum vitamin D status in a cohort of infants with food protein-induced gastrointestinal disease. Biomed Rep. 2023 Aug 30;19(4):71. https://doi.org/10.3892/br.2023.1653. eCollection 2023 Oct. PMID: 37719677

HEMATOLOGY

- Bandyopadhyay A, Palepu S, Dhamija P, et al. Safety and efficacy of Vitamin D3 supplementation with Imatinib in Chronic Phase- Chronic Myeloid Leukaemia: an Exploratory Randomized Controlled Trial. BMJ Open. 2023 Aug 29;13(8):e066361. https://doi.org/10.1136/bmjopen-2022-066361. PMID: 37643857
- 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
- Isoda A, Miyazawa Y, Ishikawa T, et al. Prevalence and clinical outcomes of vitamin D deficiency among Japanese multiple myeloma patients: a single-center observational study. Support Care Cancer. 2023 Sep 1;31(9):547. https://doi.org/10.1007/s00520-023-08021-w. PMID: 37656213
- Jindal N, Saroha M, Mirgh S, et al. Relevance of vitamin D in patients undergoing HLA matched allogeneic stem cell transplant for acute leukemia. Transpl Immunol. 2023 Aug 28;81:101925. https://doi.org/10.1016/j.trim.2023.101925. Online ahead of print. PMID: 37648032
- Nikooyeh B, Zahedirad M, Kalayi A, et al. Improvement of vitamin D status through consumption of either fortified food products or supplement pills increased hemoglobin concentration in adult subjects: Analysis of pooled data from two randomized clinical trials. Nutr Health. 2023 Sep;29(3):567-574. https://doi.org/10.1177/02601060221085351. Epub 2022 Mar 3. PMID: 35238225
- Ruiz Lopez JN, McNeil GE, Zirpoli G, et al. Vitamin D and monoclonal gammopathy of undetermined significance (MGUS) among U.S. Black women. Cancer Causes Control. 2023 Sep 14. https://doi.org/10.1007/s10552-023-01798-5. Online ahead of print. PMID: 37707565
- 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 Sep 12;7(17):4970-4982. https://doi.org/10.1182/bloodadvances.2022009618. PMID: 37276450

IMMUNOLOGY

- Abo-Zaid MA, Hamdi HA, Elashmawy NF. Vitamin D and Immunity: A comprehensive review of its impact on autoimmunity, allergy suppression, antimicrobial defense, and cancer inhibition. Egypt J Immunol. 2023 Oct;30(4):47-66. PMID: 37787773
- 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 Sep 1;20(3):359-367. https://doi.org/10.22034/iji.2023.96384.2432. PMID: 37431715
- Christofyllakis K, Neumann F, Bewarder M, et al. Vitamin D Enhances Immune Effector Pathways of NK Cells Thus Providing a Mechanistic Explanation for the Increased Effectiveness of Therapeutic Monoclonal Antibodies. Nutrients. 2023 Aug 8;15(16):3498. https://doi.org/10.3390/nu15163498. PMID: 37630689
- Daryabor G, Gholijani N, Kahmini FR. A review of the critical role of vitamin D axis on the immune system. Exp Mol Pathol. 2023 Aug;132-133:104866. https://doi.org/10.1016/j.yexmp.2023.104866. Epub 2023 Aug 17. PMID: 37572961
- Di Gioacchino M, Petrarca C, Della Valle L, et al. Is there a rationale for supplementing with vitamin D patients under treatment with allergen immunotherapy? Ann Med. 2023 Dec;55(1):2230864. https://doi.org/10.1080/07853890.2023.2230864. PMID: 37387214
- Dos Santos VM, Sugai TAM. Visceral leishmaniasis and potential role of vitamin D. Acta Clin Belg. 2023 Dec;78(6):529-530. https://doi.org/10.1080/17843286.2023.2233235. Epub 2023 Jul 10. PMID: 37424504
- 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 Sep;102(3):151336. https://doi.org/10.1016/j.ejcb.2023.151336. Epub 2023 Jun 22. PMID: 37354621
- Grund JC, Krammer S, Yang Z, et al. Vitamin D3 resolved human and experimental asthma via B lymphocyte-induced maturation protein 1 in T cells and innate lymphoid cells. J Allergy Clin Immunol Glob. 2023 Mar 24;2(3):100099. https://doi.org/10.1016/j.jacig.2023.100099. eCollection 2023 Aug. PMID: 37779516
- Guo M. Vitamin D supplementation improves the therapeutic effect of mometasone on allergic rhinitis. Acta Biochim Pol. 2023 Sep 16;70(3):583-589. https://doi.org/10.18388/abp.2020_6637. PMID: 37716008
- Jaratsittisin J, Sornjai W, Chailangkarn T, et al. The vitamin D receptor agonist EB1089 can exert its antiviral activity independently

of the vitamin D receptor. PLoS One. 2023 Oct 17;18(10):e0293010. https://doi.org/10.1371/journal.pone.0293010. eCollection 2023. PMID: 37847693

- Jaroslawska J, Carlberg C. In Vivo Regulation of Signal Transduction Pathways by Vitamin D Stabilizes Homeostasis of Human Immune Cells and Counteracts Molecular Stress. Int J Mol Sci. 2023 Sep 27;24(19):14632. https://doi.org/10.3390/ijms241914632. PMID: 37834080

- 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 Oct;62(7):2977-2990. https://doi.org/10.1007/s00394-023-03181-1. Epub 2023 Jul 17. PMID: 37458775

- Kalita MJ, Kalita S, Das PP, et al. Altered Vitamin D Receptor Expression in Apa-I (rs7975232) Allelic Variants-A Probable Risk Factor for Susceptibility to Hepatitis B Virus Infection and Disease Progression. Viral Immunol. 2023 Oct;36(8):534-543. https://doi.org/10.1089/vim.2023.0057. Epub 2023 Sep 5. PMID: 37669039

- Li K, Lu E, Wang Q, et al. Serum vitamin D deficiency is associated with increased risk of γδ T cell exhaustion in HBV-infected patients. Immunology. 2023 Sep 13. https://doi.org/10.1111/imm.13696. Online ahead of print. PMID: 37702282

- Li Q, Li W, Chen M, et al. Association of vitamin D receptor gene polymorphism with the risk of sepsis: A systematic review and meta-analysis. Medicine (Baltimore). 2023 Sep 22;102(38):e35130. https://doi.org/10.1097/MD.0000000000035130. PMID: 37746941

- Mehrani Y, Morovati S, Tieu S, et al. Vitamin D Influences the Activity of Mast Cells in Allergic Manifestations and Potentiates Their Effector Functions against Pathogens. Cells. 2023 Sep 14;12(18):2271. https://doi.org/10.3390/cells12182271. PMID: 37759494

- Methods In Medicine CAM. Retracted: A Novel Strategy for the Treatment of Allergic Rhinitis: Regulating Treg/Th17 and Th1/Th2 Balance In Vivo by Vitamin D. Comput Math Methods Med. 2023 Oct 4;2023:9836520. https://doi.org/10.1155/2023/9836520. eCollection 2023. PMID: 37829544

- Pitman MC, Meagher N, Price DJ, et al. Effect of high dose vitamin D3 on the HIV-1 reservoir: A pilot randomised controlled trial. J Virus Erad. 2023 Aug 29;9(3):100345. https://doi.org/10.1016/j.jve.2023.100345. eCollection 2023 Sep. PMID: 37753336

- Ramanarayanan P, Heine G, Worm M. Vitamin A and vitamin D induced nuclear hormone receptor activation and its impact on B cell differentiation and immunoglobulin production. Immunol Lett. 2023 Sep 27;263:80-86. https://doi.org/10.1016/j.imlet.2023.08.006. Online ahead of print. PMID: 37774987

- Ruiz-Tagle C, Romero F, Naves R, et al. Vitamin D and cathelicidin levels and susceptibility to Mycobacterium tuberculosis infection acquisition in household contacts. Enferm Infecc Microbiol Clin (Engl Ed). 2023 Oct;41(8):489-493. https://doi.org/10.1016/j.eimce.2022.04.013. Epub 2023 Jan 25. PMID: 36707289

- Sadeghian HK, Mohri M. Comparison of serum 25(OH) vitamin D, parathormone and immunity marker concentrations between dogs with transmissible venereal tumour and healthy dogs. Vet Med Sci. 2023 Sep;9(5):2026-2031. https://doi.org/10.1002/vms3.1235. Epub 2023 Aug 3. PMID: 37534440

- Sapartini G, Wong GWK, Indrati AR, et al. The Association between Vitamin D, Interleukin-4, and Interleukin-10 Levels and CD23+ Expression with Bronchial Asthma in Stunted Children. Biomedicines. 2023 Sep 15;11(9):2542. https://doi.org/10.3390/biomedicines11092542. PMID: 37760982

- 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 Sep;38(9):957-971. https://doi.org/10.1007/s10654-023-01023-2. Epub 2023 Jun 21. 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 Aug 17;11(4):e0128723. https://doi.org/10.1128/spectrum.01287-23. Epub 2023 Jul 19. PMID: 37466438

- Sun H, Wang D, Ren J, et al. Vitamin D ameliorates Aeromonas hydrophila-induced iron-dependent oxidative damage of grass carp splenic macrophages by manipulating Nrf2-mediated antioxidant pathway. Fish Shellfish Immunol. 2023 Oct 5;142:109145. https://doi.org/10.1016/j.fsi.2023.109145. Online ahead of print. PMID: 37805110

- Sun W, Chen J, Li J, et al. Vitamin D receptor-deficient keratinocytes-derived exosomal miR-4505 promotes the macrophage polarization towards the M1 phenotype. PeerJ. 2023 Aug 4;11:e15798. https://doi.org/10.7717/peerj.15798. eCollection 2023. PMID: 37554338

- Ueda K, Chin SS, Sato N, et al. Prenatal vitamin D deficiency alters immune cell proportions of young adult offspring through alteration of long-term stem cell fates. bioRxiv. 2023 Sep 13:2023.09.11.557255. https://doi.org/10.1101/2023.09.11.557255. Preprint. PMID: 37745570

- Visuthranukul J, Phansuea P, Buranakityanon P, et al. Prevalence and risk factors of vitamin D deficiency among living with HIV adults receiving antiretroviral treatment in tropical area: Cross-sectional study. Heliyon. 2023 Aug 30;9(9):e19537. https://doi.org/10.1016/j.heliyon.2023.e19537. eCollection 2023 Sep. PMID: 37809448

- Wanibuchi K, Hosoda K, Amgalanbaatar A, et al. Aspects for development of novel antibacterial medicines using a vitamin D3 decomposition product in Helicobacter pylori infection. J Antibiot (Tokyo). 2023 Sep 1. https://doi.org/10.1038/s41429-023-00651-w. Online ahead of print. PMID: 37658133

- Wimalawansa SJ. Controlling Chronic Diseases and Acute Infections with Vitamin D Sufficiency. Nutrients. 2023 Aug 18;15(16):3623. https://doi.org/10.3390/nu15163623. PMID: 37630813

- Wimalawansa SJ. Infections and Autoimmunity-The Immune System and Vitamin D: A Systematic Review. Nutrients. 2023 Sep 2;15(17):3842. https://doi.org/10.3390/nu15173842. PMID: 37686873

- Yüksek V, Dede S, Çetin S, et al. Vitamin D may assist the UPR against sodium fluoride-induced damage by reducing

RIPK1, ATG5, BECN1, oxidative stress and increasing caspase-3 in the osteoblast MC3T3-E1 cell line. J Trace Elem Med Biol. 2023 Aug 26;80:127293. https://doi.org/10.1016/j.jtemb.2023.127293. Online ahead of print. PMID: 37677921

- Zaghi I, Ielasi L, Stagni B, et al. A case of Leishmania infection with focal splanchnic involvement without systemic symptoms: a potential anti-inflammatory role for vitamin D. Acta Clin Belg. 2023 Aug;78(4):321-324. https://doi.org/10.1080/17843286.2022.2145686. Epub 2022 Nov 14. PMID: 36373331

LABORATORY

- [No authors listed] Correction to: 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 Oct 20:hvad164. https://doi.org/10.1093/clinchem/hvad164. Online ahead of print. PMID: 37862599

- [No authors listed] Method for Vitamin D Deficiency Screening. Biomed Environ Sci. 2023 Aug 20;36(8):785. https://doi.org/10.3967/bes2023.109. PMID: 37711094

- Akbari M, Parsaei H, Sedaghat K, et al. Attenuation of morphine conditioned place preference and reinstatement by vitamin D. Behav Pharmacol. 2023 Oct 1;34(7):404-410. https://doi.org/10.1097/FBP.0000000000000747. Epub 2023 Aug 15. PMID: 37581227

- Alexandridou A, Schorr P, Stokes CS, et al. Analysis of vitamin D metabolic markers by mass spectrometry: Recent progress regarding the "gold standard" method and integration into clinical practice. Mass Spectrom Rev. 2023 Sep-Oct;42(5):1647-1687. https://doi.org/10.1002/mas.21768. Epub 2021 Dec 29. PMID: 34967037

- 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 Aug;64(8):100409. https://doi.org/10.1016/j.jlr.2023.100409. Epub 2023 Jul 3. PMID: 37406930

- Bagnoud M, Remlinger J, Massy M, et al. In Vivo and In Vitro Evidence for an Interplay between the Glucocorticoid Receptor and the Vitamin D Receptor Signaling. Cells. 2023 Sep 15;12(18):2291. https://doi.org/10.3390/cells12182291. PMID: 37759513

- 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

- Cheng JH, Hoofnagle AN, Katz R, et al. Development and Validation of Novel Free Vitamin D Equations: The Health Aging and Body Composition Study. JBMR Plus. 2023 Jun 13;7(9):e10781. https://doi.org/10.1002/jbm4.10781. eCollection 2023 Sep. PMID: 37701148

- Cusano AM, Quero G, Vaiano P, et al. Metasurface-assisted Lab-on-fiber optrode for highly sensitive detection of vitamin D. Biosens Bioelectron. 2023 Sep 30;242:115717. https://doi.org/10.1016/j.bios.2023.115717. Online ahead of print. PMID: 37801838

- 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 Sep 7;8(5):940-951. https://doi.org/10.1093/jalm/jfad036. PMID: 37473445

- 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 Oct;83(6):390-393. https://doi.org/10.1080/00365513.2023.2241356. Epub 2023 Jul 28. PMID: 37504570

- Kawagoe F, Mototani S, Mendoza A, et al. Structure-activity relationship studies on vitamin D-based selective SREBP/SCAP inhibitor KK-052. RSC Med Chem. 2023 Aug 15;14(10):2030-2034. https://doi.org/10.1039/d3md00352c. eCollection 2023 Oct 18. PMID: 37859714

- Khan R, Naseem I. Antiglycation, antifibrillation and antioxidative effects of para coumaric acid and vitamin D; an in-vitro and in-silico comparative-cum-synergistic approach. Biochim Biophys Acta Gen Subj. 2023 Nov;1867(11):130455. https://doi.org/10.1016/j.bbagen.2023.130455. Epub 2023 Sep 9. PMID: 37678652

- 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 Oct;233:106367. https://doi.org/10.1016/j.jsbmb.2023.106367. Epub 2023 Jul 28. PMID: 37517743

- Lalunio H, Parker L, Hanson ED, et al. Detecting the vitamin D receptor (VDR) protein in mouse and human skeletal muscle: Strain-specific, species-specific and inter-individual variation. Mol Cell Endocrinol. 2023 Dec 1;578:112050. https://doi.org/10.1016/j.mce.2023.112050. Epub 2023 Sep 7. PMID: 37683909

- Lokesh Kumar S, Kumar S, Tetala KKR. A manganese dioxide nanoparticle-bimetallic metal organic framework composite for selective and sensitive detection of vitamin D3 in human plasma. Mikrochim Acta. 2023 Aug 5;190(9):345. https://doi.org/10.1007/s00604-023-05904-x. PMID: 37542579

- Sancar N, Tabrizi SS. Machine learning approach for the detection of vitamin D level: a comparative study. BMC Med Inform Decis Mak. 2023 Oct 16;23(1):219. https://doi.org/10.1186/s12911-023-02323-z. PMID: 37845674

- 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 Sep 20;234:115522. https://doi.org/10.1016/j.jpba.2023.115522. Epub 2023 Jun 14. PMID: 37329649

- Singer AG, McChesney C. Reduce unnecessary routine vitamin D testing. Can Fam Physician. 2023 Sep;69(9):620-622. https://doi.org/10.46747/cfp.6909620. PMID: 37704241

- Ulgu MM, Caglayan M, Ata N, et al. Cost analysis of 25-hydroxy vitamin D tests in Turkiye with big data: A cross-sectional study. North Clin Istanb. 2023 Aug 29;10(5):618-625. https://doi.org/10.14744/nci.2023.42899. eCollection 2023. PMID: 37829737

- Williams HR, Chin TE, Tokach MD, et al. The effect of bone and analytical methods on the assessment of bone mineralization response to dietary phosphorus, phytase, and vitamin D in nursery pigs. J Anim Sci. 2023 Oct 14:skad353. https://doi.org/10.1093/jas/skad353. Online ahead of print. PMID: 37837391

- Zgliczyńska M, Ostrowska M, Żebrowska K, et al. Determination of vitamin D status in singleton and twin gestations using CLIA and LC-MS/MS. Endocr Connect. 2023 Sep 27;12(11):e230201. https://doi.org/10.1530/EC-23-0201. Print 2023 Nov 1. PMID: 37610766

MISCELLANEOUS

- Agh F, Mousavi SH, Aryaeian N, et al. Senescence of bone marrow mesenchymal stem cells in Wistar male rats receiving normal chow/high-calorie diets with/without vitamin D. Biogerontology. 2023 Oct;24(5):801-812. https://doi.org/10.1007/s10522-023-10048-9. Epub 2023 Aug 22. PMID: 37606875

- Ahmed J, Reza MA, Thomas L, et al. Enhancing vitamin D3 - iron blends via twin-screw dry granulation: Microstructural properties and cellular uptake analysis of vitamin D3. Food Chem. 2024 Jan 15;431:137154. https://doi.org/10.1016/j.foodchem.2023.137154. Epub 2023 Aug 12. PMID: 37595382

- Almaghrbi H, Al-Shafai M, Al-Asmakh M, et al. Association of Vitamin D Genetic Risk Score with Noncommunicable Diseases: A Systematic Review. Nutrients. 2023 Sep 18;15(18):4040. https://doi.org/10.3390/nu15184040. PMID: 37764823

- Ang WW, Goh ET, Lai K, et al. Vitamin D and smell impairment: a systematic literature review. J Laryngol Otol. 2023 Sep;137(9):971-976. https://doi.org/10.1017/S0022215122002389. Epub 2022 Nov 7. PMID: 36341550

- Atcheson RJ, Burne THJ, Dawson PA. Serum sulfate level and Slc13a1 mRNA expression remain unaltered in a mouse model of moderate vitamin D deficiency. Mol Cell Biochem. 2023 Aug;478(8):1771-1777. https://doi.org/10.1007/s11010-022-04634-7. Epub 2022 Dec 25. PMID: 36566486

- Aydemir ME, Altun SK. Investigation of some quality properties of yogurt made from cow and sheep milk fortified with folic acid (B9), biotin (B7), and vitamin D3. J Sci Food Agric. 2023 Sep 20. https://doi.org/10.1002/jsfa.12995. Online ahead of print. PMID: 37728986

- Bano A, Abrar S, Brilli E, et al. A comparative absorption study of sucrosomial® orodispersible vitamin D3 supplementation vs. a reference chewable tablet and soft gel capsule vitamin D3 in improving circulatory 25(OH)D levels in healthy adults with vitamin D deficiency-Results from a prospective randomized clinical trial. Front Nutr. 2023 Aug 17;10:1221685. https://doi.org/10.3389/fnut.2023.1221685. eCollection 2023. PMID: 37662595

- Bartlett AL, Zhang G, Wallace G, et al. Optimized vitamin D repletion with oral thin film cholecalciferol in patients undergoing stem cell transplant. Blood Adv. 2023 Aug 22;7(16):4555-4562. https://doi.org/10.1182/bloodadvances.2023009855. PMID: 37285801

- Bhanot R, Kumar A, Shankar S, et al. Serum vitamin D level alterations in retinal vascular occlusions. Photodiagnosis Photodyn Ther. 2023 Oct 20:103855. https://doi.org/10.1016/j.pdpdt.2023.103855. Online ahead of print. PMID: 37866444

- 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 Oct;38(10):1391-1403. https://doi.org/10.1002/jbmr.4888. Epub 2023 Aug 10. PMID: 37483080

- 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

- Butler AE, Brennan E, Drage DS, et al. Association of polychlorinated biphenyls with vitamin D in female subjects. Environ Res. 2023 Sep 15;233:116465. https://doi.org/10.1016/j.envres.2023.116465. Epub 2023 Jun 19. PMID: 37343756

- 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. Genomic signaling of vitamin D. Steroids. 2023 Oct;198:109271. https://doi.org/10.1016/j.steroids.2023.109271. Epub 2023 Jul 11. PMID: 37442517

- Casado E, Costa E, Mezquita-Raya P, et al. Calcifediol in the management of vitamin D deficiency-related skeletal and extraskeletal diseases: overview and clinical cases. Drugs Context. 2023 Sep 6;12:2023-5-4. https://doi.org/10.7573/dic.2023-5-4. eCollection 2023. PMID: 37711731

- Dang R, Wang J, Tang M, et al. Vitamin D Receptor Activation Attenuates Olanzapine-Induced Dyslipidemia in Mice Through Alleviating Hepatic Endoplasmic Reticulum Stress. Adv Biol (Weinh). 2023 Aug 10:e2300228. https://doi.org/10.1002/adbi.202300228. Online ahead of print. PMID: 37565702

- Dodd SAS, Adolphe J, Dewey C, et al. Efficacy of vitamin D2 in maintaining serum total vitamin D concentrations and bone mineralisation in adult dogs fed a plant-based (vegan) diet in a 3-month randomised trial. Br J Nutr. 2023 Sep 6:1-15. https://doi.org/10.1017/S0007114523001952. Online ahead of print. PMID: 37671585

- 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

- Eichner ER. Vitamin D Supplements in Sports: A Long Run for a Short Jump. Curr Sports Med Rep. 2023 Sep 1;22(9):297-298. https://doi.org/10.1249/JSR.0000000000001101. PMID: 37678345

- Elliott TM, Gordon LG, Webb A, et al. Making the sunshine vitamin - How much sun exposure is needed to maintain 25-hydroxy vitamin D concentration? Photochem Photobiol. 2023 Sep 10. https://doi.org/10.1111/php.13854. Online ahead of print. PMID: 37691266

- Fang Z, Wu X, Wang F, et al. Vitamin D3 mediated peptides-calcium chelate self-assembly: Fabrication, stability and improve-

ment on cellular calcium transport. Food Chem. 2023 Oct 20;437(Pt 1):137779. https://doi.org/10.1016/j.foodchem.2023.137779. Online ahead of print. PMID: 37871429

- Feltrer-Rambaud Y, Moresco A, Ange-van Heugten K, et al. Serum vitamin D in sanctuary chimpanzees (Pan troglodytes) in range countries: A pilot study. Vet Med Sci. 2023 Sep 19. https://doi.org/10.1002/vms3.1279. Online ahead of print. PMID: 37725364

- Fishman J, Fisher E. Vitamin D and smell impairment, routine histology for unilateral tonsillar enlargement, and a machine learning model for predicting the three-year survival status of patients with hypopharyngeal squamous cell carcinoma. J Laryngol Otol. 2023 Sep;137(9):945. https://doi.org/10.1017/S0022215123001391. Epub 2023 Sep 6. PMID: 37671443

- Gürbostan Soysal G, Berhuni M, Özer Özcan Z, et al. Decreased choroidal vascularity index and subfoveal choroidal thickness in vitamin D insufficiency. Photodiagnosis Photodyn Ther. 2023 Aug 23;44:103767. https://doi.org/10.1016/j.pdpdt.2023.103767. Online ahead of print. PMID: 37625765

- Hamdan AL, Hosri J, Abou Raji Feghali P, et al. Effect of Vitamin D Deficiency on Voice: A Review of the Literature. J Voice. 2023 Sep 1:S0892-1997(23)00246-1. https://doi.org/10.1016/j.jvoice.2023.08.004. Online ahead of print. PMID: 37661522

- Hasan M, Oster M, Reyer H, et al. Efficacy of dietary vitamin D3 and 25(OH)D3 on reproductive capacities, growth performance, immunity, and bone development in pigs - CORRIGENDUM. Br J Nutr. 2023 Nov 28;130(10):1839. https://doi.org/10.1017/S000711452300079X. Epub 2023 Mar 27. PMID: 36967298

- Hasan M, Oster M, Reyer H, et al. Efficacy of dietary vitamin D3 and 25(OH)D3 on reproductive capacities, growth performance, immunity and bone development in pigs. Br J Nutr. 2023 Oct 28;130(8):1298-1307. https://doi.org/10.1017/S0007114523000442. Epub 2023 Feb 27. PMID: 36847163

- Hassanpour K, Langari F, Akbarzadeh AR, et al. Safety and Efficacy of Topical Vitamin D in the Management of Dry Eye Disease Associated With Meibomian Gland Dysfunction: A Placebo-Controlled Double-Blind Randomized Controlled Trial. Cornea. 2023 Oct 9. https://doi.org/10.1097/ICO.0000000000003400. Online ahead of print. PMID: 37815305

- Herrmann M, Zelzer S, Cavalier E, et al. Functional Assessment of Vitamin D Status by a Novel Metabolic Approach: The Low Vitamin D Profile Concept. Clin Chem. 2023 Oct 5:hvad151. https://doi.org/10.1093/clinchem/hvad151. Online ahead of print. PMID: 37798100

- 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 Oct;36(10):1536-1545. https://doi.org/10.5713/ab.23.0013. Epub 2023 May 4. PMID: 37170501

- 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 Oct;16(10):1866-1875. https://doi.org/10.1111/cts.13594. Epub 2023 Jul 24. PMID: 37461832

- Hu Y, Gu X, Zhang Y, et al. Adrenomedullin, transcriptionally regulated by vitamin D receptors, alleviates atherosclerosis in mice through suppressing AMPK-mediated endothelial ferroptosis. Environ Toxicol. 2023 Sep 9. https://doi.org/10.1002/tox.23958. Online ahead of print. PMID: 37688783

- International BR. Retracted: Effect of Supplementation of Vitamin D in Patients with Periodontitis Evaluated before and after Nonsurgical Therapy. Biomed Res Int. 2023 Sep 27;2023:9850874. https://doi.org/10.1155/2023/9850874. eCollection 2023. PMID: 37799169

- Islam AM, Rahman KM, Rahman MA, et al. Effect of Milk Intake and Calcium-Vitamin D Supplementation on Serum Vitamin D Status. Mymensingh Med J. 2023 Oct;32(4):1046-1051. PMID: 37777900

- Jewell DE, Panickar KS. Increased dietary vitamin D was associated with increased circulating vitamin D with no observable adverse effects in adult dogs. Front Vet Sci. 2023 Aug 9;10:1242851. https://doi.org/10.3389/fvets.2023.1242851. eCollection 2023. PMID: 37621865

- Kesavan C, Das A, Goyal P, et al. Vitamin D Deficiency (VDD) and Benefits of Supplementation in Veterans with IBS-D. Diagnostics (Basel). 2023 Aug 30;13(17):2807. https://doi.org/10.3390/diagnostics13172807. PMID: 37685345

- Khalid A, Arshad MU, Imran A, et al. Development, stabilization, and characterization of nanoemulsion of vitamin D3-enriched canola oil. Front Nutr. 2023 Aug 24;10:1205200. https://doi.org/10.3389/fnut.2023.1205200. eCollection 2023. PMID: 37693243

- Khamees AM, Al Groosh DH. Effect of vitamin D deficiency on postorthodontic relapse: An animal study. Clin Exp Dent Res. 2023 Aug;9(4):701-710. https://doi.org/10.1002/cre2.765. Epub 2023 Jul 13. PMID: 37448180

- Khan RU, Naz S, Ullah H, et al. Dietary vitamin D: growth, physiological and health consequences in broiler production. Anim Biotechnol. 2023 Nov;34(4):1635-1641. https://doi.org/10.1080/10495398.2021.2013861. Epub 2021 Dec 19. PMID: 34923931

- 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

- Książek A, Zagrodna A, Lombardi G, et al. Metabolism of vitamin D is not affected by sport activity. Clin Chim Acta. 2023 Aug 1;548:117507. https://doi.org/10.1016/j.cca.2023.117507. Epub 2023 Aug 6. PMID: 37549820

- Kuwabara N, Sato S, Nakagawa S. Effects of Long-term High-Ergosterol Intake on the Cholesterol and Vitamin D Biosynthetic Pathways of Rats Fed a High-Fat and High-Sucrose Diet. Biol Pharm Bull. 2023 Sep 30. https://doi.org/10.1248/bpb.b23-00348. Online ahead of print. PMID: 37779053

- 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 Oct;39(10):1030-1037. https://doi.org/10.1002/kjm2.12726. Epub 2023 Jul 3. PMID: 37395326

- Li C, Zhang J, Wang L, et al. A case

of early-onset periodontitis with vitamin D deficiency: A case report and literature review. Medicine (Baltimore). 2023 Sep 29;102(39):e35321. https://doi.org/10.1097/MD.0000000000035321. PMID: 37773856

- 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
- Li Y, Wang J, Cai Y, et al. Association of Serum Vitamin D With Periodontal Disease. Int Dent J. 2023 Oct;73(5):777-783. https://doi.org/10.1016/j.identj.2023.06.004. Epub 2023 Jul 5. PMID: 37419778
- Lu W, Zhou Y, Liu Y, et al. Seasonal changes of vitamin D3 and ovarian steroidogenesis in the wild ground squirrels (Citellus dauricus Brandt). J Steroid Biochem Mol Biol. 2023 Aug 24;234:106385. https://doi.org/10.1016/j.jsbmb.2023.106385. Online ahead of print. PMID: 37633652
- Manca A, Mula J, Palermiti A, et al. Vitamin D impact in affecting clozapine plasma exposure: A potential contribution of seasonality. Biomed Pharmacother. 2023 Sep;165:115103. https://doi.org/10.1016/j.biopha.2023.115103. Epub 2023 Jul 4. 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 Oct 1;34(7):2212-2216. https://doi.org/10.1097/SCS.0000000000009490. Epub 2023 Jun 19. PMID: 37336500
- McCourt AF, Mulrooney SL, O'Neill GJ, et al. Serum 25-hydroxyvitamin D response to vitamin D supplementation using different lipid delivery systems in middle-aged and older adults: a randomised controlled trial. Br J Nutr. 2023 Nov 14;130(9):1548-1557. https://doi.org/10.1017/S0007114523000636. Epub 2023 Mar 13. PMID: 36912075
- Meghil MM, Cutler CW. Influence of Vitamin D on Periodontal Inflammation: A Review. Pathogens. 2023 Sep 20;12(9):1180. https://doi.org/10.3390/pathogens12091180. PMID: 37764988
- Mieszkowski J, Brzezińska P, Stankiewicz B, et al. Vitamin D Supplementation Influences Ultramarathon-Induced Changes in Serum Amino Acid Levels, Tryptophan/Branched-Chain Amino Acid Ratio, and Arginine/Asymmetric Dimethylarginine Ratio. Nutrients. 2023 Aug 11;15(16):3536. https://doi.org/10.3390/nu15163536. PMID: 37630726
- 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
- Nyakundi PN, Némethné Kontár Z, Kovács A, et al. Fortification of Staple Foods for Household Use with Vitamin D: An Overview of Systematic Reviews. Nutrients. 2023 Aug 26;15(17):3742. https://doi.org/10.3390/nu15173742. PMID: 37686773
- Persico M, Sessa R, Cesaro E, et al. A multidisciplinary approach disclosing unexplored Aflatoxin B1 roles in severe impairment of vitamin D mechanisms of action. Cell Biol Toxicol. 2023 Aug;39(4):1275-1295. https://doi.org/10.1007/s10565-022-09752-y. Epub 2022 Sep 6. PMID: 36066700
- Pludowski P. Supplementing Vitamin D in Different Patient Groups to Reduce Deficiency. Nutrients. 2023 Aug 25;15(17):3725. https://doi.org/10.3390/nu15173725. PMID: 37686757
- Retamoso VR, Barbisan F, Moro GM, et al. VDR, SOD-2, and CYP24A1 Gene Expression in Different Genotypes of BsmI SNP of the Vitamin D Receptor Gene in Individuals with Hypovitaminosis. Nutrients. 2023 Aug 13;15(16):3565. https://doi.org/10.3390/nu15163565. PMID: 37630755
- 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 Sep;58(9):1214-1224. https://doi.org/10.1111/rda.14421. Epub 2023 Jul 10. PMID: 37386932
- Rupprecht M, Wagenpfeil S, Schöpe J, et al. Meta-Analysis of European Clinical Trials Characterizing the Healthy-Adult Serum 25-hydroxyvitamin D Response to Vitamin D Supplementation. Nutrients. 2023 Sep 14;15(18):3986. https://doi.org/10.3390/nu15183986. PMID: 37764770
- Salemi S, Zamanian MY, Giménez-Llort L, et al. Distinct signatures on d-galactose-induced aging and preventive/protective potency of two low-dose vitamin D supplementation regimens on working memory, muscular damage, cardiac and cerebral oxidative stress, and SIRT1 and calstabin2 downregulation. Food Sci Nutr. 2023 May 22;11(9):5050-5062. https://doi.org/10.1002/fsn3.3422. eCollection 2023 Sep. PMID: 37701236
- Shang S, He Z, Hou W, et al. Molecular cloning, expression analysis and functional characterization of chicken cytochrome P450 27A1: A novel mitochondrial vitamin D3 25-hydroxylase. Poult Sci. 2023 Aug;102(8):102747. https://doi.org/10.1016/j.psj.2023.102747. Epub 2023 Apr 24. PMID: 37276702
- Shapses SA, Calvo MS. Health Benefits of Vitamin D Supplementation: Time to Move the Spotlight Away from Bone Health in Vitamin D-replete Individuals? Am J Clin Nutr. 2023 Sep;118(3):489-490. https://doi.org/10.1016/j.ajcnut.2023.06.017. Epub 2023 Aug 8. PMID: 37661100
- Sharma D, Gupta V, Bhatia S, et al. Association of Vitamin D Deficiency in Patients with Tinnitus with Normal Audiogram. Indian J Otolaryngol Head Neck Surg. 2023 Sep;75(3):1992-1999. https://doi.org/10.1007/s12070-023-03751-z. Epub 2023 Apr 24. PMID: 37636653
- Shri Preethi M, Premkumar K, Asha Devi S. Molecular docking study on vitamin D supplements to understand their interaction with VDR-RXRα heterodimer and VDRE of TAGAP gene. J Biomol Struct Dyn. 2023 Sep-Oct;41(15):7009-7018. https://doi.org/10.1080/07391102.2022.2114939. Epub 2022 Aug 24. PMID: 36002290
- 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 Nov;33(11):2149-2165. https://doi.org/10.1111/sms.14449. Epub 2023 Jul 14. PMID: 37452567
- Tapalaga G, Bumbu BA, Reddy SR, et al. The Impact of Prenatal Vitamin D on Enamel Defects and Tooth Erosion: A Systematic Review. Nutrients. 2023 Sep 5;15(18):3863. https://doi.org/10.3390/nu15183863. PMID: 37764647

- Telatar BC, Telatar GY, Saydam F. Association between TaqI polymorphism of vitamin D receptor gene and vertical growth of the mandible: A cross-sectional study. Korean J Orthod. 2023 Sep 25;53(5):336-342. https://doi.org/10.4041/kjod23.129. PMID: 37746779
- Van Ankum EM, Majcher KB, Dolovich AT, et al. Food texture and vitamin D influence mouse mandible form and molar roots. Anat Rec (Hoboken). 2023 Sep 13. https://doi.org/10.1002/ar.25315. Online ahead of print. PMID: 37702738
- Varadharajan A, Sibin MK, Athira SV, et al. Correlation of CYP2R1 gene promoter methylation with circulating vitamin D levels among healthy adults. Indian J Med Res. 2023 Aug;158(2):197-200. https://doi.org/10.4103/ijmr.ijmr_3493_21. PMID: 37675692
- Voltan G, Cannito M, Ferrarese M, et al. Vitamin D: An Overview of Gene Regulation, Ranging from Metabolism to Genomic Effects. 2023 Aug 25;14(9):1691. https://doi.org/10.3390/genes14091691. PMID: 37761831
- 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
- Wang K, Ruiz-González A, Räisänen SE, et al. Dietary supplementation of vitamin D3 and calcium partially recover the compromised time budget and circadian rhythm of lying behavior in lactating cows under heat stress. J Dairy Sci. 2023 Oct 18:S0022-0302(23)00750-6. https://doi.org/10.3168/jds.2023-23589. Online ahead of print. PMID: 37863290
- Xiang L, Du T, Zhang J, et al. Vitamin D3 supplementation shapes the composition of gut microbiota and improves some obesity parameters induced by high-fat diet in mice. Eur J Nutr. 2023 Sep 23. https://doi.org/10.1007/s00394-023-03246-1. Online ahead of print. PMID: 37740812
- Yang Q, Wang YR, Liu QQ, et al. Development of arachin and basil seed gum composite gels for the encapsulation and controlled release of vitamin D3. Int J Biol Macromol. 2023 Sep 24;253(Pt 4):127071. https://doi.org/10.1016/j.ijbiomac.2023.127071. Online ahead of print. PMID: 37751816
- 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 Aug 28:2023.05.11.23289854. https://doi.org/10.1101/2023.05.11.23289854. Preprint. PMID: 37214882
- Yeo JK, Park SG, Park MG. Effects of Vitamin D Supplementation on Testosterone, Prostate, and Lower Urinary Tract Symptoms: A Prospective, Comparative Study. World J Mens Health. 2023 Oct;41(4):874-881. https://doi.org/10.5534/wjmh.220180. Epub 2023 Jan 3. PMID: 36649925
- Yilmaz R. Efficacy and safety of single or consecutive double high-dose oral cholecalciferol supplementation in adult patients with vitamin D deficiency. Steroids. 2023 Nov;199:109308. https://doi.org/10.1016/j.steroids.2023.109308. Epub 2023 Sep 4. PMID: 37673409
- 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 Oct;58(5):986-996. https://doi.org/10.1111/jre.13159. Epub 2023 Jul 13. PMID: 37439265
- Zhang Y, Li C, Zhou X, et al. Implications of vitamin D for flesh quality of grass carp (Ctenopharyngodon idella): antioxidant ability, nutritional value, sensory quality, and myofiber characteristics. J Anim Sci Biotechnol. 2023 Sep 27;14(1):134. https://doi.org/10.1186/s40104-023-00911-7. PMID: 37759314
- Zhuang Y, Zhu Z, Chi P, et al. Efficacy of intermittent versus daily vitamin D supplementation on improving circulating 25(OH) D concentration: a Bayesian network meta-analysis of randomized controlled trials. Front Nutr. 2023 Aug 24;10:1168115. https://doi.org/10.3389/fnut.2023.1168115. eCollection 2023. PMID: 37693250

NEPHROLOGY

- Al-Sroji RY, Al-Laham S, Almandili A. Protective effects of vitamin D3 (cholecalciferol) on vancomycin-induced oxidative nephrotoxic damage in rats. Pharm Biol. 2023 Dec;61(1):755-766. https://doi.org/10.1080/13880209.2023.2204916. PMID: 37139624
- 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
- Costa E Silva J, Ramos JN. Calciphylaxis Secondary to Vitamin D Supplementation. Cureus. 2023 Sep 6;15(9):e44778. https://doi.org/10.7759/cureus.44778. eCollection 2023 Sep. PMID: 37809218
- Dean YE, Elawady SS, Shi W, et al. Progression of diabetic nephropathy and vitamin D serum levels: A pooled analysis of 7722 patients. Endocrinol Diabetes Metab. 2023 Sep 24:e453. https://doi.org/10.1002/edm2.453. Online ahead of print. PMID: 37743677
- 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 Sep;33(5):618-628. https://doi.org/10.1053/j.jrn.2023.05.006. Epub 2023 Jun 9. PMID: 37302723
- Emarah SM, Ahmed MAER, El Kannishy GM, et al. Effect of vitamin D supplementation on management of anemia in hemodialysis patients with vitamin D deficiency: A double-blind, randomized, controlled trial. Hemodial Int. 2023 Oct 18. https://doi.org/10.1111/hdi.13121. Online ahead of print. PMID: 37853507
- Hsu S, Vervloet MG, de Boer IH. Vitamin D in CKD: An Unfinished Story. Am J Kidney Dis. 2023 Nov;82(5):512-514. https://doi.org/10.1053/j.ajkd.2023.07.005. Epub 2023 Sep 16. PMID: 37715768
- Komaba H, Zhao J, Karaboyas A, et al. Active Vitamin D Use and Fractures in Hemodialysis Patients: Results from the International DOPPS. J Bone Miner Res. 2023 Sep 17. https://doi.org/10.1002/jbmr.4913. Online ahead of print. PMID: 37718534
- 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

- Thorsen IS, Bleskestad IH, Åsberg A, et al. Klotho and Fibroblast Growth Factor 23 Are Independent of Vitamin D, and Unlike Vitamin D, Are Not Associated With Graft- and Patient Survival After Kidney Transplantation. Transplant Direct. 2023 Aug 9;9(9):e1522. https://doi.org/10.1097/TXD.0000000000001522. eCollection 2023 Sep. PMID: 37575950

- Vervloet MG, Hsu S, de Boer IH. Vitamin D supplementation in people with chronic kidney disease. Kidney Int. 2023 Oct;104(4):698-706. https://doi.org/10.1016/j.kint.2023.07.010. Epub 2023 Aug 2. PMID: 37541585

- Vural T, Yilmaz VT, Koksoy S, et al. Evaluation of the effect and predictive role of vitamin D and vitamin D receptor expression in CD4+, CD8+, CD14+, CD56+cells on the development of chronic rejection and graft functions in kidney transplant patients. Int Urol Nephrol. 2023 Oct;55(10):2589-2598. https://doi.org/10.1007/s11255-023-03550-z. Epub 2023 Mar 17. PMID: 36930397

- Wen Z, Sun C, Lou Y, et al. Vitamin D/Vitamin D receptor mitigates cisplatin-induced acute kidney injury by down-regulating C5aR. J Immunotoxicol. 2023 Dec;20(1):2248267. https://doi.org/10.1080/1547691X.2023.2248267. PMID: 37667858

- Xia Q, Yang W, Zhu Y, et al. [Applying Serum Vitamin D Metabolites in the Assessment of Renal Impairment in Diabetic Kidney Disease of Type 2 Diabetes Mellitus Patients: A Retrospective Study]. Sichuan Da Xue Xue Bao Yi Xue Ban. 2023 Sep;54(5):1006-1012. https://doi.org/10.12182/20230960208. PMID: 37866960

- 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 Sep;117:48-55. https://doi.org/10.1016/j.nutres.2023.05.004. Epub 2023 May 20. 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 Nov;82(5):543-558. https://doi.org/10.1053/j.ajkd.2023.04.003. Epub 2023 Jun 24. PMID: 37356648

NEUROLOGY

- [No authors listed] No benefit of vitamin D on cognition in older adults. Drug Ther Bull. 2023 Aug 24:dtb-2023-000043. https://doi.org/10.1136/dtb.2023.000043. Online ahead of print. PMID: 37620134

- Al-Kuraishy HM, Al-Gareeb AI, Selim HM, et al. Does vitamin D protect or treat Parkinson's disease? A narrative review. Naunyn Schmiedebergs Arch Pharmacol. 2023 Aug 9. https://doi.org/10.1007/s00210-023-02656-6. Online ahead of print. PMID: 37555855

- Asuman C, Aydan K, Meric KN. Role of vitamin D in the association between prestroke sleep quality and poststroke depression and anxiety. Sleep Breath. 2023 Aug 5. https://doi.org/10.1007/s11325-023-02894-1. Online ahead of print. PMID: 37542680

- Balshi A, Saart E, Dempsey J, et al. Bariatric surgery outcomes in multiple sclerosis: Interplay with vitamin D and chronic pain syndromes. Mult Scler Relat Disord. 2023 Sep 17;79:105006. https://doi.org/10.1016/j.msard.2023.105006. Online ahead of print. PMID: 37734186

- Banga A, Aulakh R, Kumar P, et al. Does ensuring optimum vitamin D levels result in early resolution of neurocysticercosis? Int J Neurosci. 2023 Dec;133(11):1285-1294. https://doi.org/10.1080/00207454.2022.2078207. Epub 2022 May 27. PMID: 35574655

- 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

- Bytowska ZK, Korewo-Labelle D, Kowalski K, et al. Impact of 12 Weeks of Vitamin D3 Administration in Parkinson's Patients with Deep Brain Stimulation on Kynurenine Pathway and Inflammatory Status. Nutrients. 2023 Sep 2;15(17):3839. https://doi.org/10.3390/nu15173839. PMID: 37686871

- Carlberg C, Mycko MP. Linking Mechanisms of Vitamin D Signaling with Multiple Sclerosis. Cells. 2023 Sep 30;12(19):2391. https://doi.org/10.3390/cells12192391. PMID: 37830605

- 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

- De Marchi F, Saraceno M, Sarnelli MF, et al. Potential role of vitamin D levels in amyotrophic lateral sclerosis cognitive impairment. Neurol Sci. 2023 Aug;44(8):2795-2802. https://doi.org/10.1007/s10072-023-06751-7. Epub 2023 Mar 23. PMID: 36949299

- Džoljić E, Matutinović MS, Stojković O, et al. Vitamin D Serum Levels and Vitamin D Receptor Genotype in Patients with Parkinson's Disease. Neuroscience. 2023 Oct 12:S0306-4522(23)00454-2. https://doi.org/10.1016/j.neuroscience.2023.10.004. Online ahead of print. PMID: 37832907

- Elseweidy MM, Mahrous M, Ali SI, et al. Retraction Note: Vitamin D alleviates cognitive dysfunction and brain damage induced by copper sulfate intake in experimental rats: focus on its combination with donepezil. Naunyn Schmiedebergs Arch Pharmacol. 2023 Oct;396(10):2767. https://doi.org/10.1007/s00210-023-02690-4. PMID: 37642663

- Elseweidy MM, Mahrous M, Ali SI, et al. Vitamin D alleviates cognitive dysfunction and brain damage induced by copper sulfate intake in experimental rats: focus on its combination with donepezil. Naunyn Schmiedebergs Arch Pharmacol. 2023 Sep;396(9):1931-1942. https://doi.org/10.1007/s00210-023-02449-x. Epub 2023 Mar 3. PMID: 36864348

- Feki S, Naifar M, Dammak M, et al. Vitamin D deficiency in relation with the systemic and central inflammation during multiple sclerosis. J Med Biochem. 2023 Aug 25;42(3):364-375. https://doi.org/10.5937/jomb0-37676. PMID: 37814621

- 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 Nov;37(11):1451-1466. https://doi.org/10.1177/02692155231174599. Epub 2023 May 11. PMID: 37166229

- García-Martín E, Navarro-Muñoz S, Ayuso P, et al. Vitamin D receptor and binding protein genes variants in patients with migraine. Ann Clin Transl Neurol. 2023

Oct;10(10):1824-1832. https://doi.org/10.1002/acn3.51872. Epub 2023 Aug 8. PMID: 37553799

- Guerini FR, Agliardi C, Oreni L, et al. Vitamin D Receptor Gene Polymorphism Predicts the Outcome of Multidisciplinary Rehabilitation in Multiple Sclerosis Patients. Int J Mol Sci. 2023 Aug 29;24(17):13379. https://doi.org/10.3390/ijms241713379. PMID: 37686183
- Hafiz AA. The neuroprotective effect of vitamin D in Parkinson's disease: association or causation. Nutr Neurosci. 2023 Sep 20:1-17. https://doi.org/10.1080/1028415X.2023.2259680. Online ahead of print. PMID: 37731327
- 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
- Jain SK, Stevens C, Margret J, et al. Alzheimer's Disease: A Review of Pathology, Current Treatments, and the Potential Therapeutic Effect of Decreasing Oxidative Stress by Combined Vitamin D and L-Cysteine Supplementation. Antioxid Redox Signal. 2023 Sep 27. https://doi.org/10.1089/ars.2023.0245. Online ahead of print. PMID: 37756366
- Jung J, Kang J, Kim T. Attenuation of homeostatic sleep response and rest-activity circadian rhythm in vitamin D deficient mice. Chronobiol Int. 2023 Aug;40(8):1097-1110. https://doi.org/10.1080/07420528.2023.2253299. Epub 2023 Sep 4. PMID: 37661839
- Khoo CS, Shukor MF, Tan JK, et al. Prevalence and predictors of vitamin D deficiency among adults with epilepsy: A cross-sectional study. Epilepsy Behav. 2023 Oct;147:109432. https://doi.org/10.1016/j.yebeh.2023.109432. Epub 2023 Sep 15. PMID: 37716324
- Kiderman D, Ben-Shabat N, Tsur AM, et al. Vitamin D Insufficiency is Associated with Higher Incidence of Dementia, a Large Community-Based Retrospective Cohort Study. J Geriatr Psychiatry Neurol. 2023 Nov;36(6):511-518. https://doi.org/10.1177/08919887231163292. Epub 2023 Mar 8. PMID: 36888907
- Korewo-Labelle D, Karnia MJ, Myślińska D, et al. Supplementation with Vitamin D3 Protects against Mitochondrial Dysfunction and Loss of BDNF-Mediated Akt Activity in the Hippocampus during Long-Term Dexamethasone Treatment in Rats. Int J Mol Sci. 2023 Sep 11;24(18):13941. https://doi.org/10.3390/ijms241813941. PMID: 37762245
- Leandro-Merhi VA, de Almeida Souza Tedrus GM, Jacober de Moraes GG, et al. Interaction between vitamin D level, antiseizure medications (ASM) and seizure control in epilepsy adult patients. Rev Neurol (Paris). 2023 Sep 25:S0035-3787(23)01014-7. https://doi.org/10.1016/j.neurol.2023.04.007. Online ahead of print. PMID: 37758540
- Leser B, Dalkner N, Tmava-Berisha A, et al. The Influence of Vitamin D Status on Cognitive Ability in Patients with Bipolar Disorder and Healthy Controls. Nutrients. 2023 Sep 22;15(19):4111. https://doi.org/10.3390/nu15194111. PMID: 37836395
- Lin CL, Chen WM, Jao AT, et al. The Protective Effect of Vitamin D on Dementia Risk in Hemodialysis Patients. Life (Basel). 2023 Aug 13;13(8):1741. https://doi.org/10.3390/life13081741. PMID: 37629597
- Lozano-Ros A, Martínez-Ginés ML, García-Domínguez JM, et al. Changes in the Expression of TGF-Beta Regulatory Pathway Genes Induced by Vitamin D in Patients with Relapsing-Remitting Multiple Sclerosis. Int J Mol Sci. 2023 Sep 22;24(19):14447. https://doi.org/10.3390/ijms241914447. PMID: 37833895
- Mancera Alzate JM, Rodriguez Vélez LM. [Vitamin D deficiency in patients with epilepsy: consideration to take into account]. Nutr Hosp. 2023 Aug 28;40(4):905-906. https://doi.org/10.20960/nh.04737. PMID: 37409727
- Mohanad M, Mohamed SK, Aboulhoda BE, et al. Neuroprotective effects of vitamin D in an Alzheimer's disease rat model: Improvement of mitochondrial dysfunction via calcium/calmodulin-dependent protein kinase kinase 2 activation of Sirtuin1 phosphorylation. Biofactors. 2023 Oct 6. https://doi.org/10.1002/biof.2013. Online ahead of print. PMID: 37801071
- Nagy D, Hricisák L, Walford GP, et al. Disruption of Vitamin D Signaling Impairs Adaptation of Cerebrocortical Microcirculation to Carotid Artery Occlusion in Hyperandrogenic Female Mice. Nutrients. 2023 Sep 5;15(18):3869. https://doi.org/10.3390/nu15183869. PMID: 37764653
- Nitzan Z, Staun-Ram E, Volkowich A, et al. Multiple Sclerosis-Associated Gut Microbiome in the Israeli Diverse Populations: Associations with Ethnicity, Gender, Disability Status, Vitamin D Levels, and Mediterranean Diet. Int J Mol Sci. 2023 Oct 9;24(19):15024. https://doi.org/10.3390/ijms241915024. PMID: 37834472
- 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 Sep;58(5):3362-3377. https://doi.org/10.1111/ejn.16098. Epub 2023 Jul 24. PMID: 37485791
- Papasavva M, Vikelis M, Siokas V, et al. Genetic Variability in Vitamin D Receptor and Migraine Susceptibility: A Southeastern European Case-Control Study. Neurol Int. 2023 Sep 5;15(3):1117-1128. https://doi.org/10.3390/neurolint15030069. PMID: 37755360
- Pertile RAN, Brigden R, Raman V, et al. Vitamin D: A potent regulator of dopaminergic neuron differentiation and function. J Neurochem. 2023 Sep;166(5):779-789. https://doi.org/10.1111/jnc.15829. Epub 2023 May 14. PMID: 37084159
- Ren YY, Wang YJ, Li JL, et al. Low vitamin D and uric acid status in patients with benign paroxysmal positional vertigo. Sci Prog. 2023 Oct-Dec;106(4):368504231205397. https://doi.org/10.1177/00368504231205397. PMID: 37807761
- Richter AL, Diepeveen-de Bruin M, Balvers MGJ, et al. Association between low vitamin D status, serotonin and clinico-bio-behavioral parameters in Alzheimer's disease. Dement Geriatr Cogn Disord. 2023 Oct 6. https://doi.org/10.1159/000534492. Online ahead of print. PMID: 37806302
- Rouhani P, Lotfi K, Anjom-Shoae J, et al. Association between patterns of nutrient intake and circulating vitamin D with sleep status among Iranian adults. Sci Rep. 2023 Sep 15;13(1):15318. https://doi.org/10.1038/s41598-023-42661-6. PMID: 37714921

- Shin HI, Park Y, Lee HJ, et al. Correlation between serum vitamin D level and benign paroxysmal positional vertigo recurrence. Auris Nasus Larynx. 2023 Oct;50(5):700-707. https://doi.org/10.1016/j.anl.2022.12.017. Epub 2023 Jan 24. PMID: 36697291

- Spiezia AL, Falco F, Manganelli A, et al. Low serum 25-hydroxy-vitamin D levels are associated with cognitive impairment in multiple sclerosis. Mult Scler Relat Disord. 2023 Oct 12;79:105044. https://doi.org/10.1016/j.msard.2023.105044. Online ahead of print. PMID: 37837668

- 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 Sep;23(5):781-788. https://doi.org/10.1111/psyg.12997. Epub 2023 Jun 30. PMID: 37391231

- Wong D, Bellyou M, Li A, et al. Magnetic Resonance Spectroscopy in the Hippocampus of Adult APP/PS1 mice following Chronic Vitamin D deficiency. Behav Brain Res. 2023 Oct 12:114713. https://doi.org/10.1016/j.bbr.2023.114713. Online ahead of print. PMID: 37838248

- Xie Y, Bai C, Feng Q, et al. Serum Vitamin D3 Concentration, Sleep, and Cognitive Impairment among Older Adults in China. Nutrients. 2023 Sep 28;15(19):4192. https://doi.org/10.3390/nu15194192. PMID: 37836477

- Yang HE, Lee BW, Choi IJ, et al. Age-dependent effect of vitamin D supplementation on musculoskeletal health in chronic spinal cord injury patients: A pilot study. J Spinal Cord Med. 2023 Oct 18:1-10. https://doi.org/10.1080/10790268.2023.2257850. Online ahead of print. PMID: 37851022

- Yang M, Arbs B, Swartz K, et al. Vitamin D concentrations in patients with cluster headache: A matched case-control study. Headache. 2023 Sep;63(8):1178-1179. https://doi.org/10.1111/head.14603. Epub 2023 Aug 4. PMID: 37539938

OBSTETRICS GYNECOLOGY

- Alifu X, Si S, Qiu Y, et al. The Association of Vitamin D during Pregnancy and mRNA Expression Levels of Inflammatory Factors with Preterm Birth and Prelabor Rupture of Membranes. Nutrients. 2023 Aug 2;15(15):3423. https://doi.org/10.3390/nu15153423. PMID: 37571360

- Ali Khan I, Alhaizan MA, Neyazi SM, et al. Relevance of Serum Levels and Functional Genetic Variants in Vitamin D Receptor Gene among Saudi Women with Gestational Diabetes Mellitus. Nutrients. 2023 Oct 8;15(19):4288. https://doi.org/10.3390/nu15194288. PMID: 37836571

- Alinia T, Sabour S, Hashemipour M, et al. Relationship between vitamin D levels and age of menopause and reproductive lifespan: Analysis based on the National health and nutrition examination survey (NHANES) 2001-2018. Eur J Obstet Gynecol Reprod Biol. 2023 Oct;289:183-189. https://doi.org/10.1016/j.ejogrb.2023.09.003. Epub 2023 Sep 7. PMID: 37690281

- Arjmand M, Abbasi H, Behforouz A. The effect of vitamin D on urgent urinary incontinence in postmenopausal women. Int Urogynecol J. 2023 Aug;34(8):1955-1960. https://doi.org/10.1007/s00192-023-05486-5. Epub 2023 Feb 24. PMID: 36826518

- Aziz A, Shah M, Siraj S, et al. Association of vitamin D deficiency and vitamin D receptor (VDR) gene single-nucleotide polymorphism (rs7975232) with risk of preeclampsia. Gynecol Endocrinol. 2023 Dec;39(1):2146089. https://doi.org/10.1080/09513590.2022.2146089. Epub 2022 Nov 17. PMID: 36395814

- Bahramian H, Sherafatmanesh S, Asadi N, et al. Effects of single-dose and co-supplementation of vitamin D and omega-3 on metabolic profile in women with polycystic ovary syndrome: An RCT. Int J Reprod Biomed. 2023 Aug 23;21(7):541-550. https://doi.org/10.18502/ijrm.v21i7.13889. eCollection 2023 Aug. PMID: 37727395

- Cochrane KM, Bone JN, Williams BA, et al. Optimizing vitamin D status in polycystic ovary syndrome: a systematic review and dose-response meta-analysis. Nutr Rev. 2023 Sep 28:nuad117. https://doi.org/10.1093/nutrit/nuad117. Online ahead of print. PMID: 37769789

- Donayeva A, Amanzholkyzy A, Nurgaliyeva R, et al. Vitamin D and vitamin D receptor polymorphism in Asian adolescents with primary dysmenorrhea. BMC Womens Health. 2023 Aug 5;23(1):414. https://doi.org/10.1186/s12905-023-02569-9. PMID: 37543584

- Hannan K, Sherer ML, Osborne LM. Vitamin D levels and anxiety symptomatology in pregnancy and the postpartum. Arch Womens Ment Health. 2023 Aug 11. https://doi.org/10.1007/s00737-023-01358-5. Online ahead of print. PMID: 37566124

- 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 Sep;49(9):2232-2244. https://doi.org/10.1111/jog.15727. Epub 2023 Jun 26. PMID: 37364886

- Hassanein MM, Huri HZ, Abduelkarem AR, et al. Therapeutic Effects of Vitamin D on Vaginal, Sexual, and Urological Functions in Postmenopausal Women. Nutrients. 2023 Aug 30;15(17):3804. https://doi.org/10.3390/nu15173804. PMID: 37686835

- Holt R, Yahyavi SK, Kooij I, et al. Effects of vitamin D on sex steroids, luteinizing hormone, and testosterone to luteinizing hormone ratio in 307 infertile men. Andrology. 2023 Aug 9. https://doi.org/10.1111/andr.13505. Online ahead of print. PMID: 37555466

- Hu F. Vitamin D and hyperemesis gravidarum: A Mendelian randomization study. J Gynecol Obstet Hum Reprod. 2023 Oct 20:102678. https://doi.org/10.1016/j.jogoh.2023.102678. Online ahead of print. PMID: 37866777

- Huff LL, Schulz EV, Richardson CD, et al. Oral Contraceptive Pills Increase Circulating 25-Hydroxy-Vitamin D Concentrations in Women Who Are Lactating. Am J Perinatol. 2023 Sep 19. https://doi.org/10.1055/s-0043-1775561. Online ahead of print. PMID: 37726015

- Idriss HT, Werler MM. Investigating the association between vitamin D dietary intake during pregnancy and incidence of clubfoot in neonates. Birth Defects Res. 2023 Oct 18. https://doi.org/10.1002/bdr2.2261. Online ahead of print. PMID: 37853656

- Jaruratanasirikul S, Boonrusmee S, Kasemsripitak S, et al. Vitamin D status in non-pregnant women of reproductive age: a study in Southern Thailand. Sci Rep. 2023 Sep 14;13(1):15264. https://doi.org/10.1038/s41598-023-42557-5. PMID: 37709920

- Jelcic D, Puzovic V, Benzon B, et al. Immunohistochemical Expression of Placental Vitamin D Receptors in Pregnancies Complicated by Early and Late-Onset Preeclampsia. Acta Med Okayama. 2023 Aug;77(4):415-422. https://doi.org/10.18926/AMO/65752. PMID: 37635142
- Kamińska K, Wiercigroch E, Małek K, et al. Biomolecular composition of porcine ovarian follicles following in vitro treatment of vitamin D3 and insulin alone or in combination. Reprod Biol. 2023 Oct 18;23(4):100818. https://doi.org/10.1016/j.repbio.2023.100818. Online ahead of print. PMID: 37862827
- Kharb S, Bhatotiya C, Nanda S, et al. Sex-specific variations in vitamin D and vitamin D binding protein (VDBP) and flipped pattern of their association in preeclamptic women with dyslipidemia. Curr Hypertens Rev. 2023 Aug 16. https://doi.org/10.2174/1573402119666230816090148. Online ahead of print. PMID: 37587824
- Koca D, Nak Y, Sendag S, et al. Evaluation of serum anti-Müllerian hormone concentrations following treatment with vitamin D in Holstein Friesian heifers. Reprod Domest Anim. 2023 Oct 3. https://doi.org/10.1111/rda.14486. Online ahead of print. PMID: 37786956
- Kuroshli Z, Novin MG, Nazarian H, et al. The Efficacy of Vitamin D Supplement in the Expression and Protein Levels of Endometrial Decidualization Factors in Women with Recurrent Implantation Failure. Reprod Sci. 2023 Oct 10. https://doi.org/10.1007/s43032-023-01349-y. Online ahead of print. PMID: 37816991
- Kwon KW, Lee YH, Yeo MH, et al. Maternal and Fetal Effects of Gestational Vitamin D Concentration. Healthcare (Basel). 2023 Aug 17;11(16):2325. https://doi.org/10.3390/healthcare11162325. PMID: 37628522
- Lee SB, Jung SH, Lee H, et al. Maternal vitamin D deficiency in early pregnancy and perinatal and long-term outcomes. Heliyon. 2023 Aug 22;9(9):e19367. https://doi.org/10.1016/j.heliyon.2023.e19367. eCollection 2023 Sep. PMID: 37809851
- Le J, Lv ZH, Peng R, et al. Evaluation of Vitamin D Status and the Analysis of Risk Factors of Vitamin D Deficiency in Twin Pregnancies. Lab Med. 2023 Sep 5;54(5):534-542. https://doi.org/10.1093/labmed/lmad005. PMID: 36869835
- Li A, Li F, Song W, et al. Gut microbiota-bile acid-vitamin D axis plays an important role in determining oocyte quality and embryonic development. Clin Transl Med. 2023 Oct;13(10):e1236. https://doi.org/10.1002/ctm2.1236. PMID: 37846137
- Li D, Zhang T, Yang H, et al. Effect of Vitamin D on the Proliferation and Barrier of Atrophic Vaginal Epithelial Cells. Molecules. 2023 Sep 13;28(18):6605. https://doi.org/10.3390/molecules28186605. PMID: 37764381
- 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
- Luo R, Wang J, Yang Y, et al. The role of serum vitamin D in patients with normal ovarian reserve undergoing the first IVF/ICSI cycle. Front Endocrinol (Lausanne). 2023 Aug 24;14:1249445. https://doi.org/10.3389/fendo.2023.1249445. eCollection 2023. PMID: 37693363
- Maktabi M, Jamilian M, Asemi Z. Retraction Note: Magnesium-Zinc-Calcium-Vitamin D Co-supplementation Improves Hormonal Profiles, Biomarkers of Inflammation and Oxidative Stress in Women with Polycystic Ovary Syndrome: a Randomized, Double-Blind, Placebo-Controlled Trial. Biol Trace Elem Res. 2023 Aug;201(8):4202-4203. https://doi.org/10.1007/s12011-022-03465-3. PMID: 36418637
- 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 Oct;233:106358. https://doi.org/10.1016/j.jsbmb.2023.106358. Epub 2023 Jul 4. PMID: 37414103
- Meija L, Piskurjova A, Nikolajeva K, et al. Vitamin D Intake and Serum Levels in Pregnant and Postpartum Women. Nutrients. 2023 Aug 7;15(15):3493. https://doi.org/10.3390/nu15153493. PMID: 37571431
- Milan KL, Jayasuriya R, Harithpriya K, et al. Impact of vitamin D resistance genes on vitamin D deficiency during pregnancy among the South Indian population. J Reprod Immunol. 2023 Sep 9;160:104143. https://doi.org/10.1016/j.jri.2023.104143. Online ahead of print. PMID: 37738710
- Okoro CC, Ikpeze OC, Eleje GU, et al. Association between serum vitamin D status and uterine leiomyomas: a case-control study. Obstet Gynecol Sci. 2023 Oct 17. https://doi.org/10.5468/ogs.23143. Online ahead of print. PMID: 37848168
- Parente E, Colannino G, Bilotta G, et al. Effect of Oral High Molecular Weight Hyaluronic Acid (HMWHA), Alpha Lipoic Acid (ALA), Magnesium, Vitamin B6 and Vitamin D Supplementation in Pregnant Women: A Retrospective Observational Pilot Study. Clin Pract. 2023 Sep 15;13(5):1123-1129. https://doi.org/10.3390/clinpract13050100. PMID: 37736936
- Paul ZR, Khanam NN, Barai SC, et al. Association of Low Vitamin D Level with Pelvic Organ Prolapse in Post Menopausal Women: A Case Control Study. Mymensingh Med J. 2023 Oct;32(4):1109-1117. PMID: 37777909
- Pich K, Rajewska J, Kamińska K, et al. Effect of Vitamin D3 on Chemerin and Adiponectin Levels in Uterus of Polycystic Ovary Syndrome Rats. Cells. 2023 Aug 8;12(16):2026. https://doi.org/10.3390/cells12162026. PMID: 37626836
- Rahman MM, Nawfal T, Khabir FA, et al. Impact of vitamin D binding protein (GC) and vitamin D receptor (VDR) gene polymorphism on the risk of developing preeclampsia. Biochem Biophys Rep. 2023 Aug 4;35:101526. https://doi.org/10.1016/j.bbrep.2023.101526. eCollection 2023 Sep. PMID: 37560440
- 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 Sep;66(5):462. https://doi.org/10.5468/ogs.22038.e1. Epub 2023 Sep 15. PMID: 37726025
- 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

- Sparic R, Andjic M, Vergara D, et al. PCOS and vitamin D: a clinical appraisal. Arch Gynecol Obstet. 2023 Sep 25. https://doi.org/10.1007/s00404-023-07227-x. Online ahead of print. PMID: 37747553

- Vasdeki D, Tsamos G, Koufakis T, et al. "You are my sunshine, my only sunshine": maternal vitamin D status and supplementation in pregnancy and their effect on neonatal and childhood outcomes. Hormones (Athens). 2023 Sep 12. https://doi.org/10.1007/s42000-023-00486-y. Online ahead of print. PMID: 37698832

- Wu C, Xin X, Chen J. Vitamin D Intake Attenuated the Association between Pesticides Exposure and Female Infertility. Clin Lab. 2023 Sep 1;69(9). https://doi.org/10.7754/Clin.Lab.2023.230201. PMID: 37702693

- Yanachkova V, Staynova R, Stoev S, et al. Benefits of using a microencapsulated vitamin D delivery system in women with polycystic ovary syndrome. Eur J Hosp Pharm. 2023 Sep;30(5):284-287. https://doi.org/10.1136/ejhpharm-2021-002967. Epub 2021 Dec 1. PMID: 34853015

- Yang M, Shen X, Lu D, et al. Effects of vitamin D supplementation on ovulation and pregnancy in women with polycystic ovary syndrome: a systematic review and meta-analysis. Front Endocrinol (Lausanne). 2023 Aug 1;14:1148556. https://doi.org/10.3389/fendo.2023.1148556. eCollection 2023. PMID: 37593349

- Zhao J, Fu S, Chen Q. Association between the serum vitamin D level and prevalence of obesity/abdominal obesity in women with infertility: a cross-sectional study of the National Health and Nutrition Examination Survey data. Gynecol Endocrinol. 2023 Dec;39(1):2217251. https://doi.org/10.1080/09513590.2023.2217251. PMID: 37267998

ONCOLOGY

- Albertelli M, Petolicchio C, Brasili S, et al. Impact of Vitamin D Deficiency on Tumor Aggressiveness in Neuroendocrine Neoplasms. Nutrients. 2023 Aug 29;15(17):3771. https://doi.org/10.3390/nu15173771. PMID: 37686803

- Bersanelli M, Cortellini A, Leonetti A, et al. Systematic vitamin D supplementation is associated with improved outcomes and reduced thyroid adverse events in patients with cancer treated with immune checkpoint inhibitors: results from the prospective PROVIDENCE study. Cancer Immunol Immunother. 2023 Nov;72(11):3707-3716. https://doi.org/10.1007/s00262-023-03522-3. Epub 2023 Aug 28. PMID: 37638980

- 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

- Bullock TA, Mack JA, Negrey J, et al. Significant Association of Poly-A and Fok1 Polymorphic Alleles of the Vitamin D Receptor with Vitamin D Serum Levels and Incidence of Squamous Cutaneous Neoplasia. J Invest Dermatol. 2023 Aug;143(8):1538-1547. https://doi.org/10.1016/j.jid.2023.01.028. Epub 2023 Feb 20. PMID: 36813159

- 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

- Chen X, Song S, Shi J, et al. Evaluating the effect of body mass index and 25-hydroxy-vitamin D level on basal cell carcinoma using Mendelian randomization. Sci Rep. 2023 Oct 2;13(1):16552. https://doi.org/10.1038/s41598-023-43926-w. PMID: 37783777

- Dai Y, Chen Y, Pu Y, et al. Circulating vitamin D concentration and risk of 14 cancers: a bidirectional Mendelian randomization study. J Cancer Res Clin Oncol. 2023 Aug 29. https://doi.org/10.1007/s00432-023-05322-9. Online ahead of print. PMID: 37642723

- 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 Sep;232:106331. https://doi.org/10.1016/j.jsbmb.2023.106331. Epub 2023 May 25. PMID: 37244301

- García-Martínez JM, Chocarro-Calvo A, Martínez-Useros J, et al. Vitamin D induces SIRT1 activation through K610 deacetylation in colon cancer. Elife. 2023 Aug 2;12:RP86913. https://doi.org/10.7554/eLife.86913. PMID: 37530744

- Gharagozloo M, Jahanian Sadatmahalleh S, Kalhor M, et al. Author Correction: Evaluation of the relationship between vitamin D levels with oocyte quality in breast cancer women: a cross-sectional study. Sci Rep. 2023 Sep 12;13(1):15042. https://doi.org/10.1038/s41598-023-42122-0. PMID: 37700076

- 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 Aug 31;7(5):pkad051. https://doi.org/10.1093/jncics/pkad051. PMID: 37494457

- Kanno K, Akutsu T, Ohdaira H, et al. Effect of Vitamin D Supplements on Relapse or Death in a p53-Immunoreactive Subgroup With Digestive Tract Cancer: Post Hoc Analysis of the AMATERASU Randomized Clinical Trial. JAMA Netw Open. 2023 Aug 1;6(8):e2328886. https://doi.org/10.1001/jamanetworkopen.2023.28886. PMID: 37606927

- Kato I, Sun J, Hastert TA, et al. 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 Sep 1;153(5):1035-1042. https://doi.org/10.1002/ijc.34436. Epub 2023 Feb 3. PMID: 36650676

- Kimsa-Furdzik M, Bednarek A, Hibner G, et al. Vitamin D and Its Metabolites Status before and during Chemotherapy in Caucasian Breast Cancer Patients. Metabolites. 2023 Sep 6;13(9):996. https://doi.org/10.3390/metabo13090996. PMID: 37755276

- Kotob SN, Kelts JL. PRIMA-1MET Does Not Restore Vitamin D Sensitivity to MDA-MB-231 and MDA-MB-468 Triple-Negative Breast Cancer Cells. ACS Omega. 2023 Aug 8;8(33):30500-30507. https://doi.org/10.1021/acsomega.3c03719. eCollection 2023 Aug 22. PMID: 37636961

- 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 Aug 14;41(8):1450-1465.e8. https://doi.org/10.1016/j.ccell.2023.06.011. Epub 2023 Jul 20. PMID: 37478851

- 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

- Meysami M, Kumar V, Pugh M, et al. Utilizing logistic regression to compare risk factors in disease modeling with imbalanced data: a case study in vitamin D and cancer incidence. Front Oncol. 2023 Sep 28;13:1227842. https://doi.org/10.3389/fonc.2023.1227842. eCollection 2023. PMID: 37841430
- 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
- Mueller PR, Kershner AJ, Breitrick BI, et al. Vitamin D and docosahexaenoic acid inhibit proliferation of the ovarian cancer cell line OVCAR4. Nutr Health. 2023 Sep 20:2601060231202565. https://doi.org/10.1177/02601060231202565. Online ahead of print. PMID: 37728210
- Paulsen EM, Rylander C, Brustad M, et al. Pre-diagnostic intake of vitamin D and incidence of colorectal cancer by anatomical subsites: the Norwegian Women and Cancer Cohort Study (NOWAC). Br J Nutr. 2023 Sep 28;130(6):1047-1055. https://doi.org/10.1017/S0007114523000077. Epub 2023 Jan 9. PMID: 36620946
- Pereira F, Fernández-Barral A, Larriba MJ, et al. From molecular basis to clinical insights: a challenging future for the vitamin D endocrine system in colorectal cancer. FEBS J. 2023 Sep 12. https://doi.org/10.1111/febs.16955. Online ahead of print. PMID: 37699548
- Pérez-Durán C, Márquez-Pete N, Gálvez-Navas JM, et al. Single Nucleotide Polymorphisms in the Vitamin D Metabolic Pathway as Survival Biomarkers in Colorectal Cancer. Cancers (Basel). 2023 Aug 12;15(16):4077. https://doi.org/10.3390/cancers15164077. PMID: 37627104
- Ross TL, Neale RE, Na R, et al. Vitamin D status during and after treatment and ovarian cancer survival. Cancer Causes Control. 2023 Aug 1. https://doi.org/10.1007/s10552-023-01757-0. Online ahead of print. PMID: 37526780
- 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 Sep;191:113241. https://doi.org/10.1016/j.ejca.2023.113241. Epub 2023 Jul 17. PMID: 37549530
- 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
- Soutullo-Castiñeiras C, Bustamante-Balén M. The role of vitamin D and calcium in preventing recurrence of colon adenomas: is precision medicine the answer? Transl Cancer Res. 2023 Sep 30;12(9):2429-2432. https://doi.org/10.21037/tcr-23-630. Epub 2023 Aug 15. PMID: 37859731
- Su YW, Lee AMC, Xu X, et al. Methotrexate Chemotherapy Causes Growth Impairments, Vitamin D Deficiency, Bone Loss, and Altered Intestinal Metabolism-Effects of Calcitriol Supplementation. Cancers (Basel). 2023 Sep 1;15(17):4367. https://doi.org/10.3390/cancers15174367. PMID: 37686643
- Wang YF, Li L, Deng XQ, et al. Association of DNA methylation of vitamin D metabolic pathway related genes with colorectal cancer risk. Clin Epigenetics. 2023 Aug 29;15(1):140. https://doi.org/10.1186/s13148-023-01555-0. PMID: 37644572
- Yang J, Zhang Q, Huang G, et al. Combined effects of vitamin D and neferine on the progression and metastasis of colorectal cancer. J Cancer Res Clin Oncol. 2023 Aug;149(9):6203-6210. https://doi.org/10.1007/s00432-022-04552-7. Epub 2023 Jan 26. PMID: 36697773
- Zhao X, Wang J, Zou L. Vitamin D and gastric cancer - A systematic review and meta-analysis. Nutr Hosp. 2023 Oct 6;40(5):1080-1087. https://doi.org/10.20960/nh.04410. PMID: 37334809

PEDIATRICS

- [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 Aug 18;108(9):e905. https://doi.org/10.1210/clinem/dgad323. PMID: 37303283
- [No authors listed] Correction to "Maternal vitamin D status in relation to infant BMI growth trajectories up to 2 years of age in two prospective pregnancy cohorts". Obes Sci Pract. 2023 Feb 9;9(4):440. https://doi.org/10.1002/osp4.664. eCollection 2023 Aug. PMID: 37546288
- Al-Qerem W, Jarab A, Jarrar Y, et al. Correlation of vitamin D receptor genotypes, specific IgE levels and other variables with asthma control in children. J Asthma. 2023 Aug 9:1-14. https://doi.org/10.1080/02770903.2023.2244580. Online ahead of print. PMID: 37530048
- Alghadir AH, Gabr SA, Iqbal A. Hand grip strength, vitamin D status, and diets as predictors of bone health in 6-12 years old school children. BMC Musculoskelet Disord. 2023 Oct 23;24(1):830. https://doi.org/10.1186/s12891-023-06960-3. PMID: 37872520
- Antonio Buendía J, Patiño DG, Lindarte EF. Vitamin D supplementation for children with mild to moderate asthma: an economic evaluation. J Asthma. 2023 Sep;60(9):1668-1676. https://doi.org/10.1080/02770903.2023.2178007. Epub 2023 Mar 6. PMID: 36755388
- Asamuka MS, Ogonda L, Onyango CG, et al. The role of vitamin D status on treatment outcome among HIV-infected children receiving care in Kisumu County, Kenya. Res Sq. 2023 Sep 19:rs.3.rs-3286937. https://doi.org/10.21203/rs.3.rs-3286937/v1. Preprint. PMID: 37790569
- Baranoglu Kilinc Y, Bolu S. The prevalence of vitamin D deficiency and the factors affecting vitamin D levels in children admitted to the outpatient clinic of pediatric endocrinology in Bolu Province. Arch Pediatr. 2023 Sep 27:S0929-693X(23)00157-4. https://doi.org/10.1016/j.arcped.2023.08.010. Online ahead of print. PMID: 37770256
- Binks MJ, Bleakley AS, Pizzutto SJ, et al. Randomised controlled trial of perinatal vitamin D supplementation to prevent ear-

ly-onset acute respiratory infections among Australian First Nations children: the 'D-Kids' study protocol. BMJ Open Respir Res. 2023 Aug;10(1):e001646. https://doi.org/10.1136/bmjresp-2023-001646. PMID: 37586777

- 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 Oct;58(10):2972-2975. https://doi.org/10.1002/ppul.26585. Epub 2023 Jul 5. PMID: 37403822
- Chen H, Zhang Z, Wu S, et al. Efficacy and Safety of High-Dose Vitamin D Supplementation versus Solifenacin or Standard Urotherapy for Overactive Bladder Dry in Children: A Randomized Clinical Trial. J Urol. 2023 Oct 23:101097JU0000000000003763. https://doi.org/10.1097/JU.0000000000003763. Online ahead of print. PMID: 37871329
- Di Felice G, D'Alessandro A, Pastore A, et al. Plasminogen Activator Inhibitor-1 and Vitamin D Association in the Overweight and Obese Pediatric Population. Nutrients. 2023 Aug 25;15(17):3717. https://doi.org/10.3390/nu15173717. PMID: 37686748
- Durá-Travé T, Gallinas-Victoriano F. Vitamin D deficiency in adolescents with obesity - Altered metabolism or environmental factors? Nutr Hosp. 2023 Oct 6;40(5):942-948. https://doi.org/10.20960/nh.04460. PMID: 37154052
- Eslami O, Cuskelly GJ, O'Connor Á. Adherence to vitamin D supplementation guidelines in children under five years of age: a systematic literature review. Eur J Nutr. 2023 Oct 4. https://doi.org/10.1007/s00394-023-03255-0. Online ahead of print. PMID: 37792100
- Filiou A, Hoyer A, Holmdahl I, et al. Vitamin D receptor genetic variant associated with asthma in Swedish school-children. Clin Exp Allergy. 2023 Oct;53(10):1045-1049. https://doi.org/10.1111/cea.14349. Epub 2023 May 29. PMID: 37246605
- Fischer PR, Johnson CR, Leopold KN, et al. Treatment of vitamin D deficiency in children. Expert Rev Endocrinol Metab. 2023 Oct 11:1-14. https://doi.org/10.1080/17446651.2023.2270053. Online ahead of print. PMID: 37861060
- 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
- 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 Oct;233:106369. https://doi.org/10.1016/j.jsbmb.2023.106369. Epub 2023 Jul 23. 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 Oct 5;52(5):1328-1340. https://doi.org/10.1093/ije/dyad060. PMID: 37178177
- Gaml-Sørensen A, Brix N, Lunddorf LLH, et al. Maternal Intake of Vitamin D Supplements during Pregnancy and Pubertal Timing in Children: A Population-Based Follow-Up Study. Nutrients. 2023 Sep 18;15(18):4039. https://doi.org/10.3390/nu15184039. PMID: 37764822
- Groufh-Jacobsen S, Abel MH, Brantsæter AL, et al. National monitoring of iodine, sodium, and vitamin D status in toddlers and women of childbearing age - results and lessons learned from a pilot study in Norway. Food Nutr Res. 2023 Aug 31;67. https://doi.org/10.29219/fnr.v67.9088. eCollection 2023. PMID: 37691743
- Guzelcicek A, Kilinc E, Fedai H, et al. Relationship between Vitamin D Level and Index of Cardio Electrophysiological Balance in Children. Comb Chem High Throughput Screen. 2023 Aug 16. https://doi.org/10.2174/1386207326666230816094807. Online ahead of print. PMID: 37587810
- Hablas NM, Keshk WA. OPG/RANK/RANKL Axis in Egyptian Children With Acute Lymphoblastic Leukemia After Maintenance Therapy: Relationship to Bone Mineral and Vitamin D Status. J Pediatr Hematol Oncol. 2023 Aug 1;45(6):e733-e738. https://doi.org/10.1097/MPH.0000000000002603. Epub 2022 Dec 6. PMID: 37494610
- Hofman-Hutna J, Hutny M, Matusik E, et al. Vitamin D Deficiency in Obese Children Is Associated with Some Metabolic Syndrome Components, but Not with Metabolic Syndrome Itself. Metabolites. 2023 Aug 4;13(8):914. https://doi.org/10.3390/metabo13080914. PMID: 37623858
- Hussein MM, Mohamed EM, Kamal TM, et al. Increased susceptibility to complicated pneumonia among egyptian children with FokI (rs2228570), not TaqI (rs731236), vitamin D receptor gene polymorphism in association with vitamin D deficiency: a case-control study. BMC Pediatr. 2023 Aug 9;23(1):394. https://doi.org/10.1186/s12887-023-04192-x. PMID: 37559014
- Imel EA, Glorieux FH, Whyte MP, et al. Burosumab vs Phosphate/Active Vitamin D in Pediatric X-Linked Hypophosphatemia: A Subgroup Analysis by Dose Level. J Clin Endocrinol Metab. 2023 Oct 18;108(11):2990-2998. https://doi.org/10.1210/clinem/dgad230. PMID: 37084401
- Indra Gunawan P, Rochmah N, Faizi M. Comparison of 25-hydroxy vitamin D serum levels among children with epilepsy in therapy with single versus multiple antiseizure medications. Epilepsy Behav Rep. 2023 Aug 26;24:100620. https://doi.org/10.1016/j.ebr.2023.100620. eCollection 2023. PMID: 37680766
- Ioannidou E, Tsakiris C, Goulis DG, et al. The association of serum vitamin D concentrations in paediatric migraine. Eur J Paediatr Neurol. 2023 Sep 16;47:60-66. https://doi.org/10.1016/j.ejpn.2023.09.007. Online ahead of print. PMID: 37738749
- Izurieta-Pacheco AC, Sangrós-Gimenez A, Martínez-Garcia E, et al. Vitamin D Status in Children With High-risk Neuroblastoma. J Pediatr Hematol Oncol. 2023 Oct 2. https://doi.org/10.1097/MPH.0000000000002762. Online ahead of print. PMID: 37779236
- Jayawardana P, Liyanage G. Vitamin D level and bone profile among 1- to 5-year-old children in Galle municipality and Bope-Poddala areas in Sri Lanka. SAGE Open Med. 2023 Aug 25;11:20503121231195997. https://doi.org/10.1177/20503121231195997. eCollection 2023. PMID: 37655306
- Karagol C, Duyan Camurdan A. Evaluation of vitamin D levels and affecting factors of vitamin D deficiency in healthy chil-

dren 0-18 years old. Eur J Pediatr. 2023 Sep;182(9):4123-4131. https://doi.org/10.1007/s00431-023-05096-9. Epub 2023 Jul 10. PMID: 37428244

- Karava V, Dotis J, Kondou A, et al. Fibroblast growth-factor 23 and vitamin D are associated with iron deficiency and anemia in children with chronic kidney disease. Pediatr Nephrol. 2023 Aug;38(8):2771-2779. https://doi.org/10.1007/s00467-023-05903-3. Epub 2023 Mar 2. PMID: 36862253

- 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

- Karkenny AJ. Response to: Pediatric Fractures: Does Vitamin D Play a Role? Concerns That Message May be Misleading. J Pediatr Orthop. 2023 Oct 2. https://doi.org/10.1097/BPO.0000000000002528. Online ahead of print. PMID: 37779281

- Kim DS, Lee JS. Vitamin D in adolescent idiopathic scoliosis: a meta-analysis. BMC Musculoskelet Disord. 2023 Aug 29;24(1):689. https://doi.org/10.1186/s12891-023-06793-0. PMID: 37644501

- 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 Oct;43(10):3767-3775. https://doi.org/10.1007/s10792-023-02787-y. Epub 2023 Jul 3. PMID: 37395907

- Korkmaz HA, Arya VB, Barisik V, et al. The Association between Vitamin D deficiency and Hepatosteatosis in Children and Adolescents with Obesity. Horm Res Paediatr. 2023 Oct 4. https://doi.org/10.1159/000533908. Online ahead of print. PMID: 37793366

- Lang JE, Ramirez RG, Balevic S, et al. Pharmacokinetics of Oral Vitamin D in Children with Obesity and Asthma. Clin Pharmacokinet. 2023 Nov;62(11):1567-1579. https://doi.org/10.1007/s40262-023-01285-9. Epub 2023 Aug 30. PMID: 37646988

- Li CJ, Chang LS, Guo MM, et al. Sex differences in vitamin D and behavioral profiles among children with allergic diseases. Food Sci Nutr. 2023 Jun 15;11(9):5492-5500. https://doi.org/10.1002/fsn3.3505. eCollection 2023 Sep. PMID: 37701228

- Li R, Han A, Hu Q, et al. Relationship between vitamin D deficiency and neonatal hypocalcemia: a meta-analysis. J Pediatr Endocrinol Metab. 2023 Aug 28;36(10):909-916. https://doi.org/10.1515/jpem-2023-0183. Print 2023 Oct 26. PMID: 37632349

- Liu Z, Huang S, Yuan X, et al. The role of vitamin D deficiency in the development of paediatric diseases. Ann Med. 2023 Dec;55(1):127-135. https://doi.org/10.1080/07853890.2022.2154381. PMID: 36495273

- Li Z, Wei X, Shao Z, et al. Correlation between vitamin D levels in serum and the risk of dental caries in children: a systematic review and meta-analysis. BMC Oral Health. 2023 Oct 19;23(1):768. https://doi.org/10.1186/s12903-023-03422-z. PMID: 37858104

- 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

- Marusca LM, Reddy G, Blaj M, et al. The Effects of Vitamin D Supplementation on Respiratory Infections in Children under 6 Years Old: A Systematic Review. Diseases. 2023 Aug 8;11(3):104. https://doi.org/10.3390/diseases11030104. PMID: 37606475

- 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 Sep 7;8(5):856-870. https://doi.org/10.1093/jalm/jfad033. PMID: 37473432

- Minkowitz B, Iobst CA. Pediatric Fractures: Does Vitamin D Play a Role? Concerns that Message May be Misleading. J Pediatr Orthop. 2023 Aug 30. https://doi.org/10.1097/BPO.0000000000002502. Online ahead of print. PMID: 37642470

- Mori JD, Kassai MS, Lebrão CW, et al. Influence of umbilical cord vitamin D serum levels on the growth of preterm infants. Nutrition. 2023 Aug 14;116:112194. https://doi.org/10.1016/j.nut.2023.112194. Online ahead of print. PMID: 37741089

- Murugeswari P, Vinekar A, Prakalapakorn SG, et al. Correlation between tear levels of vascular endothelial growth factor and vitamin D at retinopathy of prematurity stages in preterm infants. Sci Rep. 2023 Sep 27;13(1):16175. https://doi.org/10.1038/s41598-023-43338-w. PMID: 37759071

- Nasantogtokh E, Ganmaa D, Altantuya S, et al. Maternal vitamin D intakes during pregnancy and child health outcome. J Steroid Biochem Mol Biol. 2023 Oct 21:106411. https://doi.org/10.1016/j.jsbmb.2023.106411. Online ahead of print. PMID: 37871795

- Normando P, de Castro IRR, Bezerra FF, et al. Prevalence and predictors of vitamin D insufficiency in Brazilian children under 5 years of age: Brazilian National Survey on Child Nutrition (ENANI-2019). Br J Nutr. 2023 Aug 17:1-24. https://doi.org/10.1017/S0007114523001836. Online ahead of print. PMID: 37589095

- O'Hearn K, Menon K, Weiler HA, et al. A phase II dose evaluation pilot feasibility randomized controlled trial of cholecalciferol in critically ill children with vitamin D deficiency (VITdAL-PICU study). BMC Pediatr. 2023 Aug 14;23(1):397. https://doi.org/10.1186/s12887-023-04205-9. PMID: 37580663

- Oren B, Erboga Ç, Kocaay F, et al. Assessment of Tear Meniscus Dimensions Using Anterior Segment Optical Coherence Tomography in Vitamin D Deficiency in a Pediatric Population. Klin Monbl Augenheilkd. 2023 Oct;240(10):1143-1150. https://doi.org/10.1055/a-1990-8942. Epub 2022 Nov 30. PMID: 36452979

- Panda PK, Sharawat IK. Mystery of prophylactic vitamin D supplementation in healthy children: a look at vitamin D levels. Eur J Pediatr. 2023 Aug 17. https://doi.org/10.1007/s00431-023-05156-0. Online ahead of print. PMID: 37589775

- Pontán F, Hauta-Alus H, Valkama S, et al. Alkaline Phosphatase and Hyperphospha-

tasemia in Vitamin D Trial in Healthy Infants and Toddlers. J Clin Endocrinol Metab. 2023 Sep 18;108(10):e1082-e1091. https://doi.org/10.1210/clinem/dgad208. PMID: 37061810

- 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 Sep;35(9):e23911. https://doi.org/10.1002/ajhb.23911. Epub 2023 May 11. PMID: 37166151

- Rodgers MD, Mead MJ, McWhorter CA, et al. Vitamin D and Child Neurodevelopment-A Post Hoc Analysis. Nutrients. 2023 Oct 3;15(19):4250. https://doi.org/10.3390/nu15194250. PMID: 37836534

- Shimizu M, Kato T, Adachi Y, et al. Maternal Dietary Vitamin D Intake during Pregnancy Is Associated with Allergic Disease Symptoms in Children at 3 Years Old: The Japan Environment and Children's Study. Int Arch Allergy Immunol. 2023 Aug 22:1-10. https://doi.org/10.1159/000531970. Online ahead of print. PMID: 37607492

- Smyczyńska J, Pawelak N, Hilczer M, et al. The Variability of Vitamin D Concentrations in Short Children with Short Stature from Central Poland-The Effects of Insolation, Supplementation, and COVID-19 Pandemic Isolation. Nutrients. 2023 Aug 18;15(16):3629. https://doi.org/10.3390/nu15163629. PMID: 37630820

- 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

- 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 Oct;175:116862. https://doi.org/10.1016/j.bone.2023.116862. Epub 2023 Jul 30. PMID: 37524294

- Weiss ST, Mirzakhani H, Carey VJ, et al. Prenatal Vitamin D Supplementation to Prevent Childhood Asthma: 15-Year Results from the Vitamin D Antenatal Asthma Reduction Trial (VDAART). J Allergy Clin Immunol. 2023 Oct 16:S0091-6749(23)01254-X. https://doi.org/10.1016/j.jaci.2023.10.003. Online ahead of print. PMID: 37852328

- Wu F, Fuleihan GE, Cai G, et al. Vitamin D supplementation for improving bone density in vitamin D-deficient children and adolescents: systematic review and individual participant data meta-analysis of randomized controlled trials. Am J Clin Nutr. 2023 Sep;118(3):498-506. https://doi.org/10.1016/j.ajcnut.2023.05.028. Epub 2023 Aug 8. PMID: 37661104

- Yasumitsu-Lovell K, Thompson L, Fernell E, et al. Vitamin D deficiency associated with neurodevelopmental problems in 2-year-old Japanese boys. Acta Paediatr. 2023 Oct 19. https://doi.org/10.1111/apa.16998. Online ahead of print. PMID: 37859528

- Zhang RH, Yang Q, Dong L, et al. Association between vitamin D and myopia in adolescents and young adults: Evidence of national cross-sectional study. Eur J Ophthalmol. 2023 Sep;33(5):1883-1891. https://doi.org/10.1177/11206721231161498. Epub 2023 Mar 3. PMID: 36866629

- Zhang Y, Zhou CY, Wang XR, et al. Maternal and neonatal blood vitamin D status and neurodevelopment at 24 months of age: a prospective birth cohort study. World J Pediatr. 2023 Sep;19(9):883-893. https://doi.org/10.1007/s12519-022-00682-7. Epub 2023 Mar 27. PMID: 36972015

- 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 Sep;94(3):1235-1242. https://doi.org/10.1038/s41390-023-02641-y. Epub 2023 May 12. 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 Sep;108(9):742-747. https://doi.org/10.1136/archdischild-2022-325000. Epub 2023 May 17. PMID: 37197895

PNEUMOLOGY

- Abi-Ayad M, Nedjar I, Chabni N. Association between 25-hydroxy vitamin D and lung function (FEV1, FVC, FEV1/FVC) in children and adults with asthma: A systematic review. Lung India. 2023 Sep-Oct;40(5):449-456. https://doi.org/10.4103/lungindia.lungindia_213_23. PMID: 37787360

- Bastyte D, Tamasauskiene L, Golubickaite I, et al. Correction: Vitamin D receptor and vitamin D binding protein gene polymorphisms in patients with asthma: a pilot study. BMC Pulm Med. 2023 Aug 8;23(1):288. https://doi.org/10.1186/s12890-023-02579-1. PMID: 37553614

- 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 Sep;232:106332. https://doi.org/10.1016/j.jsbmb.2023.106332. Epub 2023 May 20. PMID: 37217104

- 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 Sep;22(3):477-490. https://doi.org/10.1007/s42000-023-00456-4. Epub 2023 Jun 15. PMID: 37322405

- Hua Y, Jiang T, Feng J, et al. Negligible effect of vitamin D supplementation on exacerbation in patients with chronic obstructive pulmonary disease: meta-analysis. Biochem Med (Zagreb). 2023 Oct 15;33(3):030703. https://doi.org/10.11613/BM.2023.030703. PMID: 37841773

- Kanclerska J, Wieckiewicz M, Nowacki D, et al. Sleep architecture and vitamin D in hypertensives with obstructive sleep apnea: A polysomnographic study. Dent Med Probl. 2023 Oct 20. https://doi.org/10.17219/dmp/172243. Online ahead of print. PMID: 37869762

- Kim M, Brustad N, Ali M, et al. Maternal vitamin D-related metabolome and offspring risk of asthma outcomes. J Allergy Clin Immunol. 2023 Aug 8:S0091-6749(23)00980-6. https://doi.org/10.1016/j.

jaci.2023.06.030. Online ahead of print. PMID: 37558060

- Li M. The role of vitamin D in chronic obstructive pulmonary disease with pulmonary hypertension. Pulm Circ. 2023 Oct 4;13(4):e12294. https://doi.org/10.1002/pul2.12294. eCollection 2023 Oct. PMID: 37808898
- Lin T, Zhou F, Mao H, et al. Vitamin D and idiopathic pulmonary fibrosis: a two-sample mendelian randomization study. BMC Pulm Med. 2023 Aug 23;23(1):309. https://doi.org/10.1186/s12890-023-02589-z. PMID: 37612740
- Loh HH, Lim QH, Kang WH, et al. Obstructive sleep apnea and vitamin D: an updated systematic review and meta-analysis. Hormones (Athens). 2023 Sep 14. https://doi.org/10.1007/s42000-023-00481-3. Online ahead of print. PMID: 37704922
- 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
- Olivencia MA, Villegas-Esguevillas M, Sancho M, et al. Vitamin D Receptor Deficiency Upregulates Pulmonary Artery Kv7 Channel Activity. Int J Mol Sci. 2023 Aug 2;24(15):12350. https://doi.org/10.3390/ijms241512350. PMID: 37569725
- Thejaswi SG, Koirala P, Pradhan U, et al. Severe Vitamin D Deficiency as a Risk Factor in Newly Diagnosed Tuberculosis Patients: Comparative Study on Inhabitants of High Altitude Region. Int J Prev Med. 2023 Aug 28;14:106. https://doi.org/10.4103/ijpvm.ijpvm_180_22. eCollection 2023. PMID: 37854998
- Wei J, Zhan J, Ji H, et al. Fibroblast Upregulation of Vitamin D Receptor Represents a Self-Protective Response to Limit Fibroblast Proliferation and Activation during Pulmonary Fibrosis. Antioxidants (Basel). 2023 Aug 18;12(8):1634. https://doi.org/10.3390/antiox12081634. PMID: 37627629
- Withers Green J, Vasanthakumar D. Does vitamin D supplementation reduce risk of asthma exacerbation and improve asthma control? Clin Exp Allergy. 2023 Oct 7. https://doi.org/10.1111/cea.14410. Online ahead of print. PMID: 37804101
- Wu M, Bhimavarapu A, Alvarez JA, et al. Vitamin D to prevent bone loss during acute pulmonary exacerbation: More study is needed. Bone. 2023 Dec;177:116894. https://doi.org/10.1016/j.bone.2023.116894. Epub 2023 Sep 9. PMID: 37678427

PSYCHIATRY

- Alipouri M, Amiri E, Hoseini R, et al. Effects of eight weeks of aerobic exercise and vitamin D supplementation on psychiatric 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
- Alshogran OY, Abdul-Razzak KK, Altahrawi AY. Self-reported urinary urgency in association with vitamin D and psychiatric symptoms among patients with musculoskeletal pain. Int J Clin Pharmacol Ther. 2023 Oct 5. https://doi.org/10.5414/CP204458. Online ahead of print. PMID: 37796147
- Ghosh S, Deka B. Relation of Vitamin D levels with positive and negative symptoms of schizophrenia - A hospital based cross-sectional comparative study. Indian J Psychiatry. 2023 Sep;65(9):955-960. https://doi.org/10.4103/indianjpsychiatry.indianjpsychiatry_355_23. Epub 2023 Sep 5. PMID: 37841540
- Guirgis H, Duchemin AM, Vargo S, et al. Vitamin D levels among adult psychiatric inpatients and the association with psychosis. Ann Clin Psychiatry. 2023 Nov;35(4):238-245. https://doi.org/10.12788/acp.0126. PMID: 37850995
- Ho CN, Sun CK, Wu JY, et al. Association of vitamin D deficiency with post-stroke depression: a retrospective cohort study from the TriNetX US collaborative networks. Front Nutr. 2023 Aug 4;10:1236233. https://doi.org/10.3389/fnut.2023.1236233. eCollection 2023. PMID: 37599698
- İmre O, Karaağaç M, Caglayan C. Does Decreased Vitamin D Level Trigger Bipolar Manic Attacks? Behav Sci (Basel). 2023 Sep 18;13(9):779. https://doi.org/10.3390/bs13090779. PMID: 37754057
- Jiang Y, Dang W, Nie H, et al. Omega-3 polyunsaturated fatty acids and/or vitamin D in autism spectrum disorders: a systematic review. Front Psychiatry. 2023 Aug 16;14:1238973. https://doi.org/10.3389/fpsyt.2023.1238973. eCollection 2023. PMID: 37654990
- Kalejahi P, Kheirouri S, Noorazar SG. A randomized controlled trial of Vitamin D supplementation in Iranian patients with schizophrenia: Effects on serum levels of glycogen synthase kinase-3β and symptom severity. Int J Psychiatry Med. 2023 Nov;58(6):559-575. https://doi.org/10.1177/00912174231193303. Epub 2023 Aug 6. PMID: 37545122
- Lapmanee S, Bhubhanil S, Sriwong S, et al. Oral calcium and vitamin D supplements differentially alter exploratory, anxiety-like behaviors and memory in male rats. PLoS One. 2023 Aug 11;18(8):e0290106. https://doi.org/10.1371/journal.pone.0290106. eCollection 2023. PMID: 37566598
- Li C, Palka JM, Abdullah N, et al. Link between depression and bone mineral density in Cooper Center Longitudinal Study: Indirect effects of vitamin D, inflammation, and physical activity. J Affect Disord. 2023 Oct 11;344:277-283. https://doi.org/10.1016/j.jad.2023.10.062.
- 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
- Marazziti D, Barberi FM, Fontenelle L, et al. Decreased vitamin D levels in obsessive-compulsive disorder patients. CNS Spectr. 2023 Oct;28(5):606-613. https://doi.org/10.1017/S1092852921000821. Epub 2021 Sep 23. PMID: 34551844
- Sharifan P, Darroudi S, Rafiee M, et al. Association of dietary and blood inflammatory indicators with depression, anxiety, and stress in adults with vitamin D deficiency. Int J Geriatr Psychiatry. 2023 Aug;38(8):e5972. https://doi.org/10.1002/gps.5972. PMID: 37539817
- Tsiglopoulos J, Pearson N, Mifsud N, et al. The prevalence of vitamin D deficiency and associated factors in first-episode psychosis. Early Interv Psychiatry. 2023 Sep 12. https://doi.org/10.1111/eip.13465. Online ahead of print. PMID: 37700506
- Wang G, Yuan M, Chang J, et al. Vita-

min D and depressive symptoms in an early adolescent cohort. Psychol Med. 2023 Sep;53(12):5852-5860. https://doi.org/10.1017/S0033291722003117. Epub 2022 Oct 18. PMID: 37795689

- Wang R, Xu F, Xia X, et al. The effect of vitamin D supplementation on primary depression: A meta-analysis. J Affect Disord. 2023 Oct 16:S0165-0327(23)01226-0. https://doi.org/10.1016/j.jad.2023.10.021. Online ahead of print. PMID: 37852593

- 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

- Yuan M, Li Y, Chang J, et al. Vitamin D and suicidality: a Chinese early adolescent cohort and Mendelian randomization study. Epidemiol Psychiatr Sci. 2023 Aug 9;32:e52. https://doi.org/10.1017/S2045796023000665. PMID: 37553982

- Zhang G, Li L, Kong Y, et al. Vitamin D-binding protein in plasma microglia-derived extracellular vesicles as a potential biomarker for major depressive disorder. Genes Dis. 2023 Apr 10;11(2):1009-1021. https://doi.org/10.1016/j.gendis.2023.02.049. eCollection 2024 Mar. PMID: 37692510

RHEUMATOLOGY

- Abraham ME, Robison CI, Kim WK, et al. n-3 essential fatty acid and vitamin D supplementation improve skeletal health in laying hens. Poult Sci. 2023 Sep 6;102(12):103089. https://doi.org/10.1016/j.psj.2023.103089. Online ahead of print. PMID: 37852049

- Ahmad HM, Zaki ZM, Mohamed AS, et al. Biochemical markers and FokI and TaqI vitamin D receptor genes polymorphism in rheumatoid arthritis. BMC Med Genomics. 2023 Oct 19;16(1):252. https://doi.org/10.1186/s12920-023-01668-8. PMID: 37858254

- Başbuğ V, Yaka H, Tekin AA, et al. Evaluation of the effect of vitamin D level on greater tuberosity primary bone marrow edema. J Orthop Res. 2023 Nov;41(11):2367-2371. https://doi.org/10.1002/jor.25574. Epub 2023 Apr 30. PMID: 37122199

- 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 Sep;38(9):1312-1321. https://doi.org/10.1002/jbmr.4876. Epub 2023 Jul 17. PMID: 37409797

- Carswell AT, O'Leary TJ, Swinton P, et al. Vitamin D Metabolites Are Associated With Musculoskeletal Injury in Young Adults: A Prospective Cohort Study. J Bone Miner Res. 2023 Oct;38(10):1453-1464. https://doi.org/10.1002/jbmr.4890. Epub 2023 Aug 30. PMID: 37526272

- Chen S, Chen S, Zhao Z, et al. Association of circulating vitamin D and omega 3 fatty acid with all-cause mortality in patients with rheumatoid arthritis: A large population-based cohort study. Maturitas. 2023 Sep 17;178:107848. https://doi.org/10.1016/j.maturitas.2023.107848. Online ahead of print. PMID: 37757613

- Chen Y, Sun X, Sui X, et al. Application of bone alkaline phosphatase and 25-oxhydryl-vitamin D in diagnosis and prediction of osteoporotic vertebral compression fractures. J Orthop Surg Res. 2023 Sep 30;18(1):739. https://doi.org/10.1186/s13018-023-04144-2. PMID: 37775805

- di Filippo L, Ulivieri FM, Nuti R, et al. Use of vitamin D with anti-osteoporotic drugs: are available clinical trials telling us the whole story? Endocrine. 2023 Oct 10. https://doi.org/10.1007/s12020-023-03551-z. Online ahead of print. PMID: 37815744

- Dong Z, Li M, Zhang Y, et al. Combined detection of vitamin D, CRP and TNF-α has high predictive value for osteoporosis in elderly men. Am J Transl Res. 2023 Aug 15;15(8):5536-5542. eCollection 2023. PMID: 37692933

- Ersoy S, Kesiktas FN, Sirin B, et al. The effect of vitamin D treatment on quality of life in patients with fibromyalgia. Ir J Med Sci. 2023 Sep 14. https://doi.org/10.1007/s11845-023-03521-4. Online ahead of print. PMID: 37707690

- Fischer C, Jakob F, Kohl M, et al. Additive Effects of Exercise and Vitamin D Supplementation (with and without Calcium) on Bone Mineral Density in Older Adults: A Systematic Review and Meta-Analysis. J Osteoporos. 2023 Aug 8;2023:5570030. https://doi.org/10.1155/2023/5570030. eCollection 2023. PMID: 37588008

- Gaydarski L, Sirakov I, Uzunov K, et al. A Case-Control Study of the FokI Polymorphism of the Vitamin D Receptor Gene in Bulgarians With Lumbar Disc Herniation. Cureus. 2023 Sep 20;15(9):e45628. https://doi.org/10.7759/cureus.45628. eCollection 2023 Sep. PMID: 37868452

- Ginsberg C, Blackwell T, Cheng JH, et al. The Vitamin D Metabolite Ratio is Associated with Volumetric Bone Density in Older Men. J Clin Endocrinol Metab. 2023 Oct 6:dgad587. https://doi.org/10.1210/clinem/dgad587. Online ahead of print. PMID: 37804103

- Haeri NS, Perera S, Greenspan SL. The association of vitamin D with bone microarchitecture, muscle strength, and mobility performance in older women in long-term care. Bone. 2023 Nov;176:116867. https://doi.org/10.1016/j.bone.2023.116867. Epub 2023 Aug 5. PMID: 37544395

- 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

- Kanemoto Y, Iwaki M, Sawada T, et al. Advances in the Administration of Vitamin D Analogues to Support Bone Health and Treat Chronic Diseases. J Bone Metab. 2023 Aug;30(3):219-229. https://doi.org/10.11005/jbm.2023.30.3.219. Epub 2023 Aug 31. PMID: 37718900

- 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

- Kim JW, Baek WY, Jung JY, et al. Seasonal vitamin D levels and lupus low disease activity state in systemic lupus erythematosus.

Eur J Clin Invest. 2023 Sep 19. https://doi.org/10.1111/eci.14092. Online ahead of print. PMID: 37725441

- Kressel H, Matsakas A. Current Research on Vitamin D Supplementation against Sarcopenia: A Review of Clinical Trials. Int J Sports Med. 2023 Aug 9. https://doi.org/10.1055/a-2116-9240. Online ahead of print. PMID: 37557905
- Kumar P, Kumar S, Abhilasha A, et al. The Role of Matrix Metalloproteinase 13 and Vitamin D in Osteoarthritis: A Hospital-Based Observational Study. Cureus. 2023 Sep 18;15(9):e45437. https://doi.org/10.7759/cureus.45437. eCollection 2023 Sep. PMID: 37859901
- Liu J, Xu D, Liu L, et al. Regular sling core stabilization training improves bone density based on calcium and vitamin D supplementation. BMC Musculoskelet Disord. 2023 Oct 13;24(1):815. https://doi.org/10.1186/s12891-023-06896-8. PMID: 37833695
- Li WJ, Wang XL, Chu YR, et al. Association of sarcopenia and vitamin D deficiency with glucocorticoid-induced osteoporosis in Chinese patients with rheumatoid arthritis. Clin Rheumatol. 2023 Oct 13. https://doi.org/10.1007/s10067-023-06784-5. Online ahead of print. PMID: 37831335
- Llombart R, Mariscal G, Barrios C, et al. Impact of vitamin D deficiency on mortality in patients with hip fracture: A meta-analysis. J Am Geriatr Soc. 2023 Sep 29. https://doi.org/10.1111/jgs.18601. Online ahead of print. PMID: 37772615
- Meng L, Wang X, Carson JL, et al. Vitamin D binding protein and post-surgical outcomes and tissue injury markers after hip fracture: a prospective study. J Clin Endocrinol Metab. 2023 Aug 26:dgad502. https://doi.org/10.1210/clinem/dgad502. Online ahead of print. PMID: 37633261
- Mochizuki T, Hoshi K, Yano K, et al. Smoking, Serum Albumin and 25-hydroxy Vitamin D Levels, and Bone Mineral Density Are Associated with Tooth Loss in Patients with Rheumatoid Arthritis. Intern Med. 2023 Oct 1;62(19):2821-2825. https://doi.org/10.2169/internalmedicine.1219-22. Epub 2023 Feb 22. PMID: 36823087
- Mori R, Mae M, Yamanaka H, et al. Locomotor function of skeletal muscle is regulated by vitamin D via adenosine triphosphate metabolism. Nutrition. 2023 Nov;115:112117. https://doi.org/10.1016/j.nut.2023.112117. Epub 2023 Jun 5. PMID: 37531790
- Mustafa Mohamed ME, Imad Taha Z, Hamza SB, et al. Vitamin D Levels Among Rheumatoid Arthritis Sudanese Patients: Prevalence and Correlation to Disease Activity - A Bicentric Study. Open Access Rheumatol. 2023 Sep 20;15:181-187. https://doi.org/10.2147/OARRR.S425397. eCollection 2023. PMID: 37750102
- Myung SK, Cho H. Effects of intermittent or single high-dose vitamin D supplementation on risk of falls and fractures: a systematic review and meta-analysis. Osteoporos Int. 2023 Aug;34(8):1355-1367. https://doi.org/10.1007/s00198-023-06761-3. Epub 2023 Apr 29. PMID: 37120684
- 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 Sep;232:106351. https://doi.org/10.1016/j.jsbmb.2023.106351. Epub 2023 Jun 22. PMID: 37352941
- Octary T, Gautama MSN, Duong H. Effectiveness of Vitamin D Supplements in Reducing the Risk of Falls among Older Adults: A Meta-Analysis of Randomized Controlled Trials. Ann Geriatr Med Res. 2023 Sep;27(3):192-203. https://doi.org/10.4235/agmr.23.0047. Epub 2023 Sep 1. PMID: 37654099
- Oubouchou R, -Djeraba ZAA, Kemikem Y, et al. Immunomodulatory effect of vitamin D supplementation on Behçet's disease patients: effect on nitric oxide and Th17/Treg cytokines production. Immunopharmacol Immunotoxicol. 2023 Aug 3:1-10. https://doi.org/10.1080/08923973.2023.2239490. Online ahead of print. PMID: 37535442
- Pinto Pereira SM, Garfield V, Norris T, et al. Linear and Nonlinear Associations Between Vitamin D and Grip Strength: A Mendelian Randomization Study in UK Biobank. J Gerontol A Biol Sci Med Sci. 2023 Aug 2;78(8):1483-1488. https://doi.org/10.1093/gerona/glac255. PMID: 36566435
- Przedlacki J, Ołdakowska-Jedynak U. The antifracture efficacy of vitamin D in adults - are we assessing it reliably? A systematic review. Endokrynol Pol. 2023 Oct 2. https://doi.org/10.5603/ep.95639. Online ahead of print. PMID: 37779375
- Rahman A, Waterhouse M, Baxter C, et al. The effect of vitamin D supplementation on pain: an analysis of data from the D-Health randomised controlled trial. Br J Nutr. 2023 Aug 28;130(4):633-640. https://doi.org/10.1017/S0007114522003567. Epub 2022 Nov 25. PMID: 36426546
- Saengsiwaritt W, Jittikoon J, Chaikledkaew U, et al. Effect of vitamin D supplementation on circulating level of autophagosome protein LC3A, inflammation, and physical performance in knee osteoarthritis. Clin Transl Sci. 2023 Sep 25. https://doi.org/10.1111/cts.13646. Online ahead of print. PMID: 37749758
- Saengsiwaritt W, Ngamtipakon P, Udomsinprasert W. Vitamin D and autophagy in knee osteoarthritis: A review. Int Immunopharmacol. 2023 Oct;123:110712. https://doi.org/10.1016/j.intimp.2023.110712. Epub 2023 Jul 29. PMID: 37523972
- Shevchuk S, Marynych L, Malovana T, et al. Vitamin D level in patients with systemic lupus erythematosus: its relationship to disease course and bone mineral density. Lupus Sci Med. 2023 Aug;10(2):e000968. https://doi.org/10.1136/lupus-2023-000968. PMID: 37558268
- Sist M, Zou L, Galloway SDR, et al. Effects of vitamin D supplementation on maximal strength and power in athletes: a systematic review and meta-analysis of randomized controlled trials. Front Nutr. 2023 Sep 29;10:1163313. https://doi.org/10.3389/fnut.2023.1163313. eCollection 2023. PMID: 37841405
- 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 Oct;53(10):e14038. https://doi.org/10.1111/eci.14038. Epub 2023 Jun 14. PMID: 37314058
- Stawicki MK, Abramowicz P, Sokolowska G, et al. Can vitamin D be an adjuvant therapy for juvenile rheumatic diseases? Rheumatol Int. 2023 Nov;43(11):1993-2009. https://doi.org/10.1007/s00296-023-05411-5. Epub 2023 Aug 11. PMID: 37566255

- Stratos I, Schleese S, Rinas I, et al. Effect of Calcitriol and Vitamin D Receptor Modulator 2 on Recovery of Injured Skeletal Muscle in Wistar Rats. Biomedicines. 2023 Sep 7;11(9):2477. https://doi.org/10.3390/biomedicines11092477. PMID: 37760917
- Tong X, Zhang Y, Zhao Y, et al. Vitamin D Alleviates Cadmium-Induced Inhibition of Chicken Bone Marrow Stromal Cells' Osteogenic Differentiation In Vitro. Animals (Basel). 2023 Aug 7;13(15):2544. https://doi.org/10.3390/ani13152544. PMID: 37570352
- Tripepi G, Fusaro M, Arcidiacono G, et al. Evaluating benefit from vitamin D supplementation: defining the area for treatment. Osteoporos Int. 2023 Sep;34(9):1531-1533. https://doi.org/10.1007/s00198-023-06802-x. Epub 2023 May 27. PMID: 37243726
- Trivedi MK, Branton A, Trivedi D, et al. Vitamin D3 supplementation improves spatial memory, muscle function, pain score, and modulates different functional physiological biomarkers in vitamin D3 deficiency diet (VDD)-induced rats model. BMC Nutr. 2023 Sep 25;9(1):108. https://doi.org/10.1186/s40795-023-00767-0. PMID: 37749664
- Tv P, Kumar B, Chidambaram Y, et al. Correlation of Rheumatoid arthritis disease severity with serum vitamin D levels. Clin Nutr ESPEN. 2023 Oct;57:697-702. https://doi.org/10.1016/j.clnesp.2023.08.025. Epub 2023 Aug 25. PMID: 37739725
- Wang R, Wang ZM, Xiang SC, et al. Relationship between 25-hydroxy vitamin D and knee osteoarthritis: a systematic review and meta-analysis of randomized controlled trials. Front Med (Lausanne). 2023 Aug 2;10:1200592. https://doi.org/10.3389/fmed.2023.1200592. eCollection 2023. PMID: 37601800
- Wang Z, Zhu Z, Pan F, et al. Long-term effects of vitamin D supplementation and maintaining sufficient vitamin D on knee osteoarthritis over 5 years. Arthritis Res Ther. 2023 Sep 23;25(1):178. https://doi.org/10.1186/s13075-023-03167-8. PMID: 37740217
- Wen Y, Latham CM, Moore AN, et al. Vitamin D status associates with skeletal muscle loss after anterior cruciate ligament reconstruction. JCI Insight. 2023 Oct 19:e170518. https://doi.org/10.1172/jci.insight.170518. Online ahead of print. PMID: 37856482
- Wiedemann P, Schmidt FN, Amling M, et al. Zinc and vitamin D deficiency and supplementation in hypophosphatasia patients - A retrospective study. Bone. 2023 Oct;175:116849. https://doi.org/10.1016/j.bone.2023.116849. Epub 2023 Jul 22. PMID: 37487860
- 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
- Yakabe M, Hosoi T, Matsumoto S, et al. Prescription of vitamin D was associated with a lower incidence of hip fractures. Sci Rep. 2023 Aug 9;13(1):12889. https://doi.org/10.1038/s41598-023-40259-6. PMID: 37558795
- Zhang J, Cheng Y, Chen C, et al. Interaction of estradiol and vitamin D with low skeletal muscle mass among middle-aged and elderly women. BMC Womens Health. 2023 Sep 15;23(1):491. https://doi.org/10.1186/s12905-023-02646-z. PMID: 37715186
- Zhang XL, Zhang Q, Zhang X, et al. Effect of vitamin D3 supplementation in winter on physical performance of university students: a one-month randomized controlled trial. J Int Soc Sports Nutr. 2023 Dec;20(1):2258850. https://doi.org/10.1080/15502783.2023.2258850. Epub 2023 Sep 21. PMID: 37735799
- Zhao SS, Mason A, Gjekmarkaj E, et al. Associations between vitamin D and autoimmune diseases: Mendelian randomization analysis. Semin Arthritis Rheum. 2023 Oct;62:152238. https://doi.org/10.1016/j.semarthrit.2023.152238. Epub 2023 Jun 30. PMID: 37437450
- Öner N, Çelikel E, Tekin ZE, et al. The effect of vitamin D supplementation on attacks in PFAPA syndrome patients with low vitamin D levels. Ir J Med Sci. 2023 Oct 23. https://doi.org/10.1007/s11845-023-03555-8. Online ahead of print. PMID: 37870706