

**Introduction.** Vitamin D or "vitamin of the sun" is well known for its anti-inflammatory and immunomodulatory effects, prevention of osteomalacia and osteoporosis and influence on the metabolism of calcium and bones. In addition, it prevents diabetes, multiple sclerosis, cancer, heart disease and even depression. Therefore, studies show that vitamin D, which the human body produces through its exposure to the sun, can reduce the risk of colorectal cancer, breast cancer, ovaries, prostate or any other type of cancer. It also influences many physiological processes, including muscle function, cardiovascular homeostasis, nerve function, cell integrity and immune response. A lot of studies show that this vitamin fights cancer by encouraging cell differentiation, preventing cell growth, inducing apoptosis and preventing the formation of blood vessels within tumors. Following observational studies, it has been noted that the high prevalence of vitamin D deficiency, combined with the discovery of increased risks of certain cancers, suggests that vitamin D lack may account for several thousand annual premature cancer deaths.

**Aim of the study.** The purpose of this study was to present the main conclusions about vitamin D and its effects in cancer prevention and treatment. This finding creates a new impetus for providing suitable vitamin D intake to reduce the risk of cancer.

**Materials and methods.** The review was performed by searching the PubMed database including publications on the etiology and prevention of chronic vitamin D. The most relevant literature was revised from 2010-2019.

**Results.** In vitro and animal studies indicate that vitamin D may have anti-cancer benefits, including against the progression and metastasis of a wide spectrum of cancers. This is because human cells are capable of metabolizing 25-hydroxyvitamin D in 1,25-(OH)-2D, the reaction being catalyzed by enzyme 1- $\alpha$ -hydroxylase (CYP27B1). The combined presence of 25-(OH) D-1 hydroxylase as well as the specific receptor in several tissues introduced the idea of a paracrine role for 1,25-(OH) 2D. Furthermore, it has been shown that 1,25-(OH)-2D promotes cell differentiation and has anti-inflammatory, pro-apoptotic and anti-angiogenic actions, and also inhibits the proliferation of cancer cells.

**Conclusions.** Vitamin D deficiency and insufficiency are closely linked to the increased prevalence of cancer. Thus, vitamin D can be administered within the norm (250-500 nmol/L) to prevent cancer as well as against its progression and metastasis. Therefore, the academic environment, public funding agencies and industry should urgently design appropriate studies in order to define better the causal relationship between vitamin D nutrition and cancer, as well the optimal vitamin D nutrition based on an accurate measurement of 25-(OH)-D, and inform the public and medical profession accordingly.

**Key words:** vitamin D, 25-hydroxyvitamin D, prevention, cancer.

### 303. LACTOSE INTOLERANCE: MISBELIEF AND REALITY

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**Introduction.** Nowadays a common misrepresentation of lactose intolerance, perpetuated by advertising of lactose-free diets, low-lactose products, the increased popularity of veganism has led to the exclusion of lactose containing foods.

**Aim of the study.** The aim of this review was to evaluate the current information regarding lactose intolerance in order to establish whether the prevalent misconception has scientific grounds.

**Materials and methods.** An extensive English search was undertaken of the PubMed database for the terms “lactose intolerance”, “self-reported lactose intolerance”, and relevant articles from 2010-2020 were examined.

**Results.** Lactose intolerance is associated with gastrointestinal symptoms with intra- and inter-individual variability after ingestion of lactose-containing foods, this relation being influenced by: the expression of lactase, dose of lactose, intestinal flora, gut transit time, ingestion of other dietary components, the sensitivity of the gastrointestinal tract and the genetically programmed decrease in lactase synthesis. While lactose is the main factor considered, other maldigested carbohydrates, dairy related nutrients (some fats or casein proteins) and some gastrointestinal diseases may be taken in account. A nocebo effect has also been considered to contribute to the exaggerated understanding of lactose intolerance, individuals erroneously attributing their symptoms to lactose consumption. Inappropriate avoidance of dairy products can lead to nutritional inadequacy, increasing the risk of osteoporosis, bone fractures, hypertension.

**Conclusions.** The common wrong understanding of lactose intolerance has led to the increasing misleading self-diagnosis, a decision that results in a series of consequences associated with diet restrictions.

**Key words:** lactose intolerance, the nocebo effect, lactase persistence, self-reported lactose intolerance

### 304. PHENOPTOSIS - BIOCHEMICAL MECHANISMS

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**Introduction.** In the last decades, we have witnessed a real "inflation" of medical discussions and research on science of longevity and anti-aging medicine. Understanding the aging process can offer us different solutions to slow down the process and enjoy health and vitality for a longer time.

**Aim of the study.** Studying the biochemical mechanisms and the influence of the various factors in phenoptosis and description of the miraculous effects of antioxidant substances.

**Materials and methods.** Have been studied 17 articles from relevant scientific journals regarding the terms “phenoptosis”, “oxidative stress”, “reactive oxygen species”, “antioxidant”.

**Results.** After highlighting all the sequential steps in carrying out the aging program, we may deduce the important role of the mitochondria, as the energy supply stations of the cell, and at the same time, sources of free radical production. Lipid peroxidation exacerbates during the aging process in cells – increases the pro-oxidative capacity and decreases the antioxidant capacity. It was discovered the most effective protector against reactive oxygen species, the compound SkQ1, to which plastoquinone, the natural antioxidant of the plants, is attached. SkQ is able to delay the development of signs of aging and increase the life span of a large variety of animals.