

Advances in Vitamin E Research in Medicine

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Abstract: Objective: To explore the research progress of vitamin E in the field of modern medicine, and to provide the basis for clinical research and application of vitamin E. **Methods:** To search PubMed, China Knowledge Network (CNKI), China Biomedical Literature Database (CBM), Wanfang Database for Vitamin E related literature, and to summarize its research progress and clinical application prospects. **Results and Conclusions:** VitE has various functions, and the dosage should be strictly according to the clinical requirements, and clinical research should be increased to study how it is absorbed and transported, utilized and retained in tissues and organs, and to clarify the precise dosage for the application of each clinical condition.

Keywords: Vitamin E; Tocopherols; Antioxidants; Clinical studies

Fat-soluble VitE is an indispensable antioxidant for the human body, and in recent years, medical research on VitE has progressed rapidly.

1. Clinical applications of vitamin E in various diseases

1.1 Antioxidant effects of vitamin E in metabolic and genetic diseases

McCay et al. ^[1] suggested that VitE protects cell membranes from free radicals generated by peroxidation of unsaturated esters. In the 1980s, researchers found that metabolic and hereditary diseases occur in people with VitE deficiency. VitE's ability to enhance the immune function of T-lymphocytes has been demonstrated in experimental models in animals ^[2] and in older adults in the U. S ^[3]. The prostaglandin theory, that VitE protects normal cellular function by scavenging peroxides produced by the metabolism of immune cells ^[4], has often been recognized by the general public.

1.2 Antioxidant Studies of Vitamin E in Cardiovascular Diseases

Li Li et al. ^[5] conducted a randomized group control experiment on 48 female aged rats to determine the serum MDA content and SOD and GSH-PX activities and found that a mixture of VitE and soy isoflavones can act as an antioxidant. Li Aiyang et al. ^[6] experimented the role of VitE in the treatment of atherosclerosis in rabbits to improve the hardness of myocardial ischemic membrane phospholipid bilayer and reduce its deformability. In the 1980s, combinable cross-investigation experiments showed that VitE and VitC can protect cardiac tissue from oxidative damage ^[7]. George Asian CDC's Watkin et al. found that long-term use of multivitamins than those who do not take 15% lower rate of heart disease and stroke. Sun Jianqi et al. ^[8] observed the effects of exogenous aldosterone infusion on myocardial remodeling and oxidative stress levels in rats and found that VitE was able to reduce the level of Aid-induced myocardial oxidative stress in rats, significantly improve myocardial fibrosis and reduce cardiomyocyte apoptosis. Wang Qiong et al. ^[9] applied ultrasound technology to observe that VitE and VitC could improve the endothelium-dependent vasodilatory function of the impaired brachial artery in hypertensive patients. Gao et al. ^[10] observed VitE levels in patients with coronary artery disease and found that the more severe the patient's symptoms were, the lower the serum VitE level was. Kou et al. ^[11] reported that when 40 mg/L of VitE was added to stored serum, plasma free hemoglobinase was significantly reduced, SOD activity and ATP concentration were effectively maintained, and the integrity of stored erythrocytes was maintained. However, the optimal concentration and method of VitE incorporation need to be explored.

1.3 Antioxidant Effects of Vitamin E in Cancer and Liver Diseases

Researchers at home and abroad have found that VitE has certain efficacy on skin cancer, lung cancer, stomach cancer, cervical cancer and prostate cancer. The new anticancer drug VitE and its ester can effectively inhibit the proliferation of prostate cancer cells, and some experiments have shown that a-tocopherol can inhibit the proliferation of breast cancer cells^[12]. The Finnish National Cancer Institute and the Helsinki National Center for Public Health found that the prevalence of lung cancer in people with high VitE content in the blood was reduced by 19%, indicating that VitE can control the progression of cancer.

VitE has an effect on non-enzymatic glycation of aortic collagen in rats with diabetes^[13]. Chen Ling et al. ^[14] used a one-time intraperi-

toneal injection of streptozotocin (sTz 55 mg/kg) to induce a diabetic rat model for control group experiments, demonstrating the synergistic antioxidant effects of VitE and aminoguanidine in the treatment of DN.

The ability of VitE to inhibit iron overload-induced hepatic fibrosis by directly preventing Ito cell proliferation and collagen production was first demonstrated by Pietrangelo et al. [15]. The results were further demonstrated by Leek et al. [16]. Sun Shizong et al. [17] demonstrated that VitE synergized with VitC could significantly reduce serum ALT and AST and the content of lipid peroxides MDA in hepatocytes, and had a preventive protective effect against chemical liver injury.

2. Clinical Application of Vitamin E in Various Population Diseases

2.1 Preventive and Delaying Effects of Vitamin E on Age-related Diseases

In 1997, the New England Journal of Medicine study [18] said that large doses of VitE can slow down the development of Alzheimer's disease, and that the drug selegiline is also within the VitE role in the treatment of Parkinson's disease. The Journal of the American Geriatrics Society published a study of Alzheimer's disease and the degree of decline in brain function that linked VitE levels to cognitive protection in older adults. A study by the University of Western Ontario in London, England, claimed that taking VitE and VitC in patients with early cataracts reduced the risk of developing complete cataracts by 50%.

2.2 Therapeutic Effects of Vitamin E on Female Diseases

Li Qing et al. [19] study let chloasma patients take VitE and VitC complex, after treatment blood LPO value is significantly lower than the pre-treatment blood value, melanocytes release melanin significantly reduced. Tan Yongling et al. [20] found that VitE has the function of preventing the progression of mild gestational hypertension syndrome. 66 cases of mild hypertensive syndrome of pregnancy patients were grouped and controlled to take VitE, and it was found that the mean arterial pressure, the incidence of severe hypertensive syndrome of pregnancy and the rate of cesarean section in the treatment group were significantly lower than those in the control group.

3. Combined effects of vitamin E and other drugs

The antioxidant synergistic effect of VitE can also be used in combination with other drugs, such as follicular keratosis pilaris treated with VitE combined with cod liver oil [21], unusual psoriasis treated with selenium and VitE, [22] pemphigus vulgaris treated with Chinese medicine plum blossom needle percussion plus topical VitE [23], delayed epilepsy after stroke assisted by VitE scavenging free radicals therapy [24], and so on.

4. Summary and Prospect

In summary, with more and more research on the health care, medical and cosmetic effects of vitamin E, the market demand for vitamin E is also increasing. Vitamin E has various functions, but overdose can cause toxic side effects, and long-term use of vitamin E should be carried out under the guidance of a physician, depending on the time of the day and the person, and the appropriate cause and the appropriate amount. It is hoped that in the future, in-depth research can be conducted, such as radioisotope labeling method to study how it is absorbed, transported, utilized and retained in tissues and organs, and to clarify the precise dosage for each clinical condition, so as to make more contributions to the clinic.

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