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(REVIEW ARTICLE)

Vitamins and Cancer Immunotherapy

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Abstract

Vitamins are essential for cellular growth and nutrition. The bioavailability of vitamins may affect the immune system's ability to fight cancer. Research efforts investigate the complex interplay of vitamins, immune cells, and cancer cells to improve treatment outcomes. This review explores managing the intake of vitamin A, B, C, D, E, and K to enhance the efficacy of forced-atopy cancer immunotherapy.

Keywords: Atopy; Cancer; Immunotherapy; Skin Cream; Vitamins

1. Introduction

Forced-atopy cancer immunotherapy is an alternative approach to fighting cancer. Hyper-allergenic skin creams use natural and recombinant allergens to stimulate the adaptive immune system [1,2]. Managing amino acids and FDA-approved vaccines may also enhance forced-atopy cancer immunotherapy [3,4]. This review discusses the catalytic effect of vitamin A, B, C, D, E, and K on forced-atopy cancer immunotherapy.

2. Discussion

2.1. Vitamin A

Limit nutritional supplements and foods with vitamin A during forced-atopy cancer immunotherapy.

Vitamin A is lipid-soluble with a recommended daily intake of 900 micrograms (mcg) for adult men and 700 mcg for adult women [5].

In a study from the journal of Clinical and Experimental Allergy (2020), the researchers concluded, "Vitamin A deficiency can exacerbate extrinsic atopic dermatitis by augmenting Th2-mediated inflammation and mast cell activation" [6].

Foods with high levels of vitamin A include apricots, butter, cantaloupe, carrots, cheese, cream, eggs, fortified margarine, fortified milk, liver, pumpkin, sweet potatoes, and winter squash [7].

Vitamin A supplementation does not help prevent recurrence or prolong survival in patients with melanoma, head and neck cancer, or non-small cell lung cancer. It may also increase the risk of prostate cancer [8].

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2.2. Vitamin B

Sustained use of nutritional supplements and foods with vitamin B during forced-atopy cancer immunotherapy is beneficial.

Vitamin B is water-soluble with no toxic dose established in humans. More than 50 mg per day can cause skin flushing. More than 1500 to 1600 mg per day can cause liver toxicity, especially in the presence of pre-existing liver disease [9].

Studies have demonstrated that vitamin B deficiency impairs aspects of both humoral and cell-mediated immunity [10, 11, 12].

Foods with high levels of vitamin B include beef, brewer's yeast, chicken, clams, leafy greens, legumes, mussels, oysters, pork, sunflower seeds, and turkey [13].

Vitamin B supplementation has no significant effect on cancer incidence, death due to cancer, and total mortality [14].

2.3. Vitamin C

Limit nutritional supplements and foods with vitamin C during forced-atopy cancer immunotherapy.

Vitamin C is water-soluble with a recommended daily intake for adults from 65 to 90 milligrams (mg) and an upper limit of about 2,000 mg. A megadose of vitamin C can cause diarrhea, nausea, vomiting, heartburn, abdominal cramps, headache, and insomnia [15].

Vitamin C deficiency can cause or aggravate the occurrence and development of atopy. For example, plasma levels of vitamin C are decreased in atopic dermatitis [16].

Foods with high levels of vitamin C include broccoli, brussels sprouts, cabbage, cantaloupe, cauliflower, citrus fruits, kiwifruit, leafy greens, peppers–red and green, potatoes–sweet and white, spinach, strawberries, tomatoes, tomato juice, turnip greens, and winter squash.

The National Institute of Health communicates, "At this time, the evidence is inconsistent on whether dietary vitamin C intake affects cancer risk. Results from most clinical trials suggest that modest vitamin C *supplementation* alone or with other nutrients offers no benefit in the prevention of cancer" [17].

2.4. Vitamin D

Limit nutritional supplements and foods with vitamin D during forced-atopy cancer immunotherapy.

Vitamin D is lipid-soluble with a recommended daily intake of 400 international units (IU) for children up to age 12 months, 600 IU for people ages 1 to 70 years old, and 800 IU for people over 70 years old [18].

Vitamin D has mainly inhibitory effects on adaptive immunity [19, 20]. Vitamin D deficiency is associated with atopic dermatitis [21].

Vitamin D food includes beef liver, canned tuna, cod liver oil, egg yolk, fortified cereal and oatmeal, fortified cow's milk, fortified orange juice, fortified soy milk, herring, mushrooms, salmon, sardines, and swordfish [22].

A cancer study shows that supplemental vitamin D does not reduce cancer incidence [23].

2.5. Vitamin E

Limit nutritional supplements and foods with vitamin E during forced-atopy cancer immunotherapy.

Vitamin E is lipid-soluble with a recommended daily intake of 15 milligrams for adults [24].

In a study from the *Lancet* (2000), researchers write, "We investigated the relation between dietary vitamin E intake and serum IgE concentrations and atopy, measured as allergen skin sensitization, in a random sample of 2633 adults. Higher concentrations of vitamin E intake were associated with lower serum IgE concentrations and a lower frequency of allergen sensitization" [25].

Foods with high levels of vitamin E include almonds, asparagus, avocados, beet greens, mango, peanuts, peanut butter, pumpkin, safflower oil, spinach, soybean oil, sunflower oil, sunflower seeds, and wheat germ oil [26].

The National Institute of Heath communicates that evidence to date is insufficient to support taking vitamin E to prevent cancer [27].

2.6. Vitamin K

Limit nutritional supplements with vitamin K during forced-atopy cancer immunotherapy.

Vitamin-K is lipid-soluble with a recommended daily intake of 120 mcg for men and 90 mcg for women [28].

Vitamin K2 suppresses proliferation and inflammatory cytokine production in mitogen-activated lymphocytes of atopic dermatitis patients through the Inhibition of mitogen-activated protein kinases [29].

A higher intake of vitamin K is not useful for treating aggressive cancers [30].

3. Conclusion

Vitamins are biological catalysts that can affect the actions of immune cells and cancer cells. Vitamin intake during forced-atopy cancer immunotherapy may alter cancer progression. This review proposes managing vitamins during hyper-allergenic skin cream therapy to support solid tumor regression.

Compliance with ethical standards

Acknowledgments

Michael J. Dochniak is cofounder of Alleam, LLC, Minnesota, and the United States of America.

Author's Profile

Michael J. Dochniak has authored several books relating to Alzheimer's disease, Artificial Intelligence, Autism Spectrum Disorders, and Climate Change through Cambridge Scholars Publishing and Nova Science Publishers.

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