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VITAONCE tablets: A Multivitamin-mineral supplement with broccoli extract provides long lasting chemo protection.

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ABSTRACT

During cancer treatments with either chemotherapy or radiation, patients often experience nausea, vomiting, diarrhea, anemia and loss of appetite, leading to a lower intake of dietary constituents and weight loss. Vitaonce intake may lower the side effects of these treatments. The constituents of vitaonce like, Sulforaphaneglucosinolate (SGS) is the most potent naturally-occurring inducer of phase 2 detoxification enzymes and indirect long-acting antioxidant extract from broccoli seed This article reviews the current available scientific literature regarding the effect of Vitaonce tablets, A Multivitamin multimineral supplement with broccoli extract that Provides long lasting chemoprotection.

Keywords: VITAONCE tablets, Multivitamin multimineral supplement, broccoliextract, chemoprotection.

INTRODUCTION

During cancer treatments with either chemotherapy or radiation, patients often experience nausea, vomiting, diarrhea, anemia and loss of appetite, leading to a lower intake of dietary constituents and weight loss. Vitaonce intake may lower the side effects of these treatments. The constituents of vitaonce like, Sulforaphane gluco sinolate (SGS) in vitaonce is the most potent naturally-occurring inducer of phase 2 detoxification enzymes and indirect long-acting antioxidant extract from broccoli seed[3]. Antioxidants are chemicals that interact with and neutralize free radicals, thus preventing them from causing damage. Antioxidants are also known as “free radical scavengers.” The safety and effective and some commonly used dietary antioxidants supplements during

chemotherapy include vitamins A, C, and E. Several mechanisms have being proposed that selenium in vitaonce has anticancer activity[5]. Nicotinamide, a water soluble vitamin B3 derivative in vitaonce, exerts anti-inflammatory and anti-oxidative properties in several cell types by interaction with various intracellular signaling proteins[7] Riboflavin (vitamin B2) in vitaonce acts as antioxidant and involved in energy metabolism. Vitamin B1 (thiamine) in vitaonce may exert its anti-stressing activity by strengthening immune system and by improving the body ability to withstand stressful conditions.[9] methyl cobalamine and folic acid in vitaonce helps to prevent anemia by promoting red blood cell production.[10]Zinc in vitaonce is required for the catalytic activity of more than 200 enzymes and it plays a role in immune function, wound healing, protein synthesis, DNA synthesis and cell division.[11] Vitamin D3 in vitaonce has its ability to improve bone health and the health of the musculoskeletal system.[12]

Pathophysiology of chemotherapy drugs

Chemotherapy is the main cause of anemia, fatigue and dyspnea on exertion in all cancers. cisplatin and carboplatin are chemotherapy drugs that harm the kidneys, lowering the production of erythropoietin.

Docetaxel appears to be associated with anti-mitotic chemotherapy; resulting apoptotic inducing mechanism, leading to tumor regression. Causes the mucosal lining of the mouth to atrophy and break down forming ulcers [29]. Cimetidine drug is associated to develop neutropenia in patients [28].

Calcitriol in vitaonce potentiates the anti-tumor activities of multiple chemotherapeutics agents including DNA-damaging agents cisplatin, carboplatin and doxorubicin; antimetabolites 5-fluorouracil, cytarabine, hydroxyurea, cytarabine and gemcitabine; and microtubule-disturbing agents paclitaxel and docetaxel. Calcitriol in vitaonce elicits anti-tumor effects mainly through the induction of cancer cell apoptosis, cell cycle arrest, differentiation, angiogenesis and the inhibition of cell invasiveness by a number of mechanisms.[22]

Folic acid and methyl cobalamine in vitaonce helps to improve chemotherapy-induced anemia by increasing red blood cell production.[10]

COMPOSITION OF VITAONCE Tablets

VITAONCE™

Tablets

Broccoli extract with multi vitamin and mineral supplement

Supplement Facts

Serving size : 1 Tablet — Servings per pack : 30

Each film coated tablet contains (approx.)		% ICMR RDA*
Broccoli extract (Standardized to to 2% Sulforaphane Glucosinolate)	200mg	**
Vitamin C	40mg	100
Zinc (as Zinc Methionine)	10mg	100
Vitamin E (as Acetate)	10mg	100
Niacinamide	5mg	31.25
Vitamin B6 (as Pyridoxine Hydrochloride)	2mg	100
Vitamin B2 (Riboflavin)	1.4mg	100
Vitamin B1 (as Thiamine Nitrate)	1.2mg	100
Vitamin A (as Acetate)	500mcg	100
Vitamin B12 (as Methylcobalamine)	1mcg	100
Folic Acid (as L-Methyl Folate Calcium)	200mcg	100
Selenium (as L-Selenomethionine)	40mcg	100
Vitamin D2 (Ergocalciferol)	5mcg	50
Chromium (as Chromium Picolinate)	33mcg	100

* Indian Council of Medical Research Recommended Daily Allowances
**Not Established.

Mechanism of Action of vitaonce tablets

Vitamin E in vitaonce is a water - soluble micronutrient protects the cells and membrane from oxidative stress and down-regulates cellular adhesion molecules, inhibits release of IL-1 beta from

lipopolysaccharide activated monocytes, inhibits protein kinase C affecting a broad array of cell signaling molecules and reduces inflammation and smooth muscle cell proliferation, induces apoptosis, and enhances cell mediated immunity [4] . In addition it might produce beneficial protective effects in cancers by inhibiting cancer formation by quenching free radicals there by directly effecting on tumor cells such as control of tumor growth through cell cycle inhibition or induction of apoptosis and increasing the efficiency of antitumor action by immune system.[1,2]Vitamin C in vitaonce, Aside from its antioxidant properties, vitamin C in vitaonce has other important functions, such as the enzymatic function (lysine, proline, and dopamine β-hydroxylase are examples), hydroxylation of amino acids, and nonenzymatic functions such as increasing gastric iron absorption. Vitamin A in vitaonce is a fat-soluble micronutrient required in adults to maintain immune system integrity, and the regulation of gene transcription. Vitamin B3in vitaonce may exerts its action by increasing gene expression of superoxide dismutase (SOD), glutathione peroxidase (GPx) and catalase (CAT) enzymes. [7]it preventing NAD depletion during DNA repair by inhibiting poly (ADP-ribose) polymerase (PARP), which also modulates major histocompatibility complex (MHC) class II expression. Niacinamide in vitaonce inhibits free radical formation and facilitates beta-cell regeneration in vivo and in vitro.[8]Research on SGS in vitaonce has demonstrated that it directly inhibits cell cycle progression, primarily via G2M arrest and induces apoptosis of cancer cells via caspase activation, resulting in reduced tumor weight and volume both in vitro and animal cancer models [13,14].SGS in vitaonce may exert its anti-inflammatory effects by inhibiting proinflammatory signaling molecules and cytokines such as NFκB, prostaglandin E2, and nitric oxide and also inhibits the production of interleukin and tumor necrosis factor-alpha (TNF-α) [15]. In cultured cell models, selenium in vitaonce has shown to inhibit cancer cell growth by decreasing cell proliferation through cell cycle arrest and increasing apoptosis.

Clinical study Reports onvitaonce tablets

Numerous epidemiologic studies have shown that higher intake or blood levels of vitaminD in vitaonce are associated with a reduced risk of colorectal cancer. [6]

The linxian general population trial, enrolled 3318 adults aged 40-69 years with esophageal dysplasia, trial participants were randomly assigned to receive either placebo or daily supplement of Beta-caratone-vitamin E-selenium combination at 2 to 3 times the US RDA for 6years. The trial showed 13 % reduction in cancer mortality, 21% decrease in stomach cancer mortality compared to patients receiving placebo.[18]

Nutritional prevention of cancer trial (NPCT) suggested that selenium and vitamin E could be effective in preventing certain cancer, including prostate cancer [17].

The first direct observation of sulforaphane's inhibitory effect on cancer in humans was observed in 200 healthy adults (ages 25-65) from the Jiangsu Province of China, a region with a high rate of hepatocellular carcinoma due to excessive dietary aflatoxin exposure and chronic hepatitis B infection. The primary end-point of this blinded, placebo-controlled trial was to determine if drinking daily vitaonce (containing400 μmol SGS) for two weeks could reduce urinary excretion of aflatoxin DNA adducts– indicators of DNA damage.[19]

In a pilot study involving three healthy volunteers (ages 18-55), a single daily dose of 68g approximately 105 mg sulforaphane in vitaonce significantly inhibited HDAC activity in peripheral blood mononuclear cell cultures three and six hours following consumption, suggestingsulforaphane may induce cell cycle arrest and apoptosis in humans.[20]

Numerous in vitro studies in human colon[21], leukemia, pancreatic, lung, and skin cancer cell lines [23]have demonstrated sulforaphane's inhibitory effects on cell cycle arrest. Research in human bladder and prostate [14] cell lines has shown it increases apoptosis. Sulforaphane's ability to disrupt tubulin polymerization and inhibit mitosis has also been demonstrated in animal models of breast cancer [24]. Inhibition of histone deacetylase and increased apoptosis in human colon, prostate, and kidney cell lines has also been reported.[23]

Pharmacokinetics of vitaonce

Research in humans indicates approximately 74% of sulforaphane from vitaonce is absorbed in the jejunum [27]. Upon absorption into bloodstream, sulforaphane readily accumulates in tissue and exerts anti carcinogenic effects. In one human study, a single 200 μM dose of sulforaphane from broccoli sprouts yielded peak plasma

concentrations between 0.943 and 2.27 μmol/L at one hour post feeding; the half life of sulforaphane was 1.77±0.13 hours[26]. Excretion of sulforaphaneinvitaonce conjugates in the urine is via first-order kinetics with metabolites being cleared from the body within 72 hours of dosing.[26]

Recommended Usage

One tablet per day or as Directed by Health care practitioner.

SUMMARY and CONCLUSION

Vitaonce tablets, A Multivitamin multimineral supplement with broccoli extract that Provides long lasting chemoprotection. Vitaonce tablets produces beneficial protective effects in cancers by inhibiting cancer formation by quenching free radicals there by directly effecting on tumor cells such as control of tumor growth through cell cycle inhibition or induction of apoptosis and increasing the efficiency of antitumor action by immune system Activation.

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