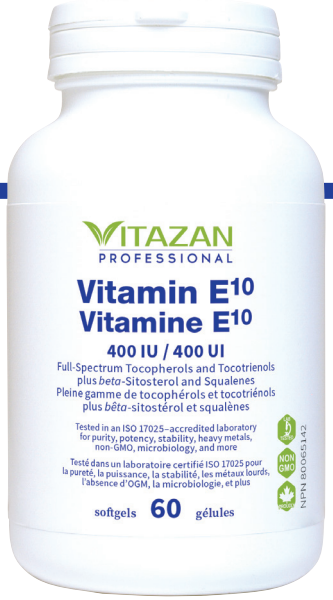
Vitamin E^{10} 400 IU



Vitamin E is a fat-soluble antioxidant that plays a crucial role in protecting cell membranes from oxidative damage. It consists of eight naturally occurring compounds: four tocopherols (α, β, γ, δ) and four tocotrienols (α, β, γ, δ). *alpha*-Tocopherol is the most biologically active form in humans.

Mechanism of Action

Vitamin E acts as an antioxidant by neutralizing free radicals and preventing lipid peroxidation. It also plays a role in immune function, gene expression, and cell signaling. Tocotrienols exhibit additional benefits, such as modulating cholesterol synthesis and providing neuroprotective effects.

Health Benefits

Natural vitamin E (D-*alpha*-tocopherol) is a potent antioxidant that protects cells from oxidative damage, supports cardiovascular health by preventing LDL oxidation, enhances immune function, and promotes skin health by reducing inflammation and UV damage.

Mixed tocopherols from non-GMO soy provide broad antioxidant support, protecting LDL cholesterol, supporting blood vessels, and reducing inflammation. *gamma*- and *delta*-tocopherols are especially effective against nitrogen-based free radicals and offer cardiovascular and anti-inflammatory benefits.

Free plant sterols from non-GMO soy aid cholesterol management by reducing dietary cholesterol absorption, lowering LDL, and promoting healthy lipid levels. *beta*-Sitosterol supports cholesterol balance and prostate health, while campesterols and stigmasterols enhance lipid-lowering and anti-inflammatory effects.

Tocotrienols from non-GMO palm fruit provide superior lipid protection, support brain and cardiovascular health, reduce arterial stiffness, and protect against UV-induced skin damage. *gamma*- and *delta*-tocotrienols are particularly effective in modulating cholesterol synthesis and inflammation.

Squalene from olive (*Olea europaea*) boosts skin hydration and elasticity, and they repair while providing antioxidant protection and supporting immune function.

Therapeutic Uses

This formula provides synergistic antioxidant and anti-inflammatory support for cardiovascular, skin, and immune health. Vitamin E may also help with deficiency, exercise-induced muscle damage, PMS symptoms, abnormal pregnacy or recurring miscarriage, Alzheimer's, vision changes, and nonalcoholic steatohepatitis (NASH).

Clinical Studies with Vitamin E

Study Type	Participants	Treatment	Results	Clinical Implications	Ref.
Immune Function					
Double-blind, placebo-controlled clinical trial.	Healthy women (n = 108) aged between 18 and 25.	400 mg tocotrienol-rich fraction (TRF) compared to placebo for 56 days. Blood samples were collected on days 0, 28, and 56. On day 28, all participants received a tetanus toxoid (TT) vaccine (20 Lf*) intramuscularly.	The TRF group showed higher production of interferon-γ, IL-4, and anti-TT IgG and lower IL-6 levels ($p < 0.05$) compared to the placebo group.	TRF has immunostimulatory effects and potential clinical benefits to enhance immune response to vaccines.	1

* Lf = limit of flocculation

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Study Type	Participants	Treatment	Results	Clinical Implications	Ref.
Secondary analysis of the Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study in Finland, 1985–1993.	Participants were male smokers aged 50–69 years at the baseline who started to smoke at ≥ 21 years (n = 7,469).	Intervention was 50 mg/d of vitamin E for 5–8 years. The outcome was the incidence of hospital-treated, community-acquired pneumonia by the age at the follow-up.	Vitamin E reduced pneumonia incidence by 69% in those smoking 5–19 cigarettes per day who exercised (95% CI: 43%–83%) and by 72% in those who quit smoking (95% CI: 31%–89%). Among heavy smokers (≥ 20 cigarettes per day) or nonexercisers, pneumonia incidence was 14% lower (95% CI: −38% to +21%).	Strong evidence shows vitamin E reduces pneumonia risk in elderly males, especially moderate smokers who exercise and former smokers, making it a potential preventive measure.	2
Cardiovascular Health					
Double-blinded, placebo-controlled clinical trial.	353 men and women ≥ 40 years old with LDL cholesterol (LDL-C) ≥ 3.37 mmol/L (130 mg/dL) and no clinical signs or symptoms of CVD.	Eligible participants were randomized to DL-α-tocopherol (400 IU/d) or placebo and followed every 3 months for an average of 3 years. The primary trial endpoint was the rate of change in the common carotid artery far-wall intima-media thickness (IMT) assessed by computer image-processed B-mode ultrasonograms.	Compared with placebo, α-tocopherol supplementation significantly raised plasma vitamin E levels ($p < 0.0001$), reduced circulating oxidized LDL ($p = 0.03$), and reduced LDL oxidative susceptibility ($p < 0.01$).	While α-tocopherol supplementation boosted vitamin E levels and reduced oxidative stress markers, it did not slow IMT progression over three years. It may be useful for antioxidant support but is not effective alone in preventing cardiovascular disease progression.	3
Double-blind, placebo-controlled study with stratified randomization.	2,002 patients with angiographically proven coronary atherosclerosis were enrolled and followed up for a median of 510 days.	1,035 patients were assigned α-tocopherol (capsules containing 800 IU/d for the first 546 patients; 400 IU/d for the remainder); 967 received identical placebo capsules. The primary endpoints were a combination of cardiovascular death and nonfatal MI as well as nonfatal MI alone.	α-Tocopherol treatment significantly reduced the risk of cardiovascular death and nonfatal MI (41 v. 64 events; relative risk 0.53, $p = 0.005$), primarily by lowering nonfatal MI risk (14 v. 41, $p = 0.005$)	α-Tocopherol reduced nonfatal MIs in patients with coronary atherosclerosis, with benefits seen after one year. However, the potential increase in cardiovascular deaths suggests it should be part of a broader treatment approach.	4
Neurological Support					
Double-blind, placebo-controlled, randomized clinical trial.	60 men and women, cognitively healthy individuals aged ≥ 65 years.	1 g/d fish oil (430 mg docosahexaenoic acid, 90 mg eicosapentaenoic acid), 22 mg carotenoids (10 mg lutein, 10 mg *meso*-zeaxanthin, 2 mg zeaxanthin), and 15 mg vitamin E or placebo for 24 months	After 24 months of supplementation, the active group (n = 30, mean age 69.03) made fewer errors in working-memory tasks than the placebo group (n = 30, mean age 69.77), with effect sizes ranging from 0.090 to 0.105. The active group performed better as task difficulty increased.	These results support a biologically plausible rationale whereby these nutrients work synergistically, and in a dose-dependent manner, to improve working memory in cognitively healthy older adults.	5
Population-based, prospective cohort study in the Netherlands.	5,395 participants, aged 55+ years, who were free of dementia and provided dietary information at study baseline.	Incidence of dementia and Alzheimer's disease (AD), based on internationally accepted criteria, relative to dietary intake of vitamin E, vitamin C, *beta*-carotene, and flavonoids.	Over a 9.6-year follow-up, higher vitamin E intake at baseline was associated with a 25% lower risk of dementia, with those in the highest tertile being less likely to develop dementia (hazard ratio 0.75, $p = 0.02$). No similar association was found for vitamin C, *beta*-carotene, or flavonoids. These results were consistent for Alzheimer's disease specifically.	Higher intake of foods rich in vitamin E may modestly reduce long-term risk of dementia and AD.	6

Study Type	Participants	Treatment	Results	Clinical Implications	Ref.
Endometriosis and PMS					
Randomized, triple-blind, placebo-controlled clinical trial.	60 reproductive-aged (15–45 years) women with pelvic pain. They had 1–3 stages of laparoscopic-proven endometriosis.	Randomized to group A ($n = 30$), given vitamin C (1,000 mg/d, 2 tablets of 500 mg each) and vitamin E (800 IU/d, 2 tablets of 400 IU each) combination, or group B ($n = 30$), given placebo pills daily for 8 weeks.	After 8 weeks of supplementation in vitamins C and E, the treatment group showed a significant reduction in malondialdehyde (MDA) and reactive oxygen species (ROS) compared to the placebo group. Pelvic pain ($p < 0.001$), dysmenorrhea ($p < 0.001$), and dyspareunia ($p < 0.001$) significantly decreased in the treatment group.	The intake of vitamin C and vitamin E supplements effectively reduced dysmenorrhea severity and improved dyspareunia and severity of pelvic pain.	7
Randomized, double-blind, controlled trial.	86 women completed the PMS Daily Symptoms Record for 2 months and were randomly assigned to two intervention groups and one control group.	The groups received either a tablet containing 200 mg vitamin D, 100 mg vitamin E, or a placebo each day. After 2 months, the results of pre- and postintervention were compared.	Supplemental therapy with vitamins D and E was an effective and affordable treatment for PMS, with vitamin E showing slightly greater effectiveness than vitamin D and placebo in reducing symptoms, though no significant difference was found between the three groups.	According to this study, vitamins D and E are an effective and affordable treatment for PMS. All compounds used in the current study had no side effects, were effective, nonsynthetic, and acceptable by most groups of women in the society.	8
Male Infertility					
Double-blind, placebo-controlled, randomized study.	101 couples (50 in the vitamin E group and 51 in the placebo group) undergoing IVF (64.4% of cases had an abnormal spermiogram according to World Health Organization criteria).	Vitamin E (α-tocopherol, 400 mg/d for 3 months) with sperm analysis performed immediately before starting the treatment and 3 months later on the day of IVF.	Sperm motility was higher in the vitamin E group, but not statistically significant. Clinical pregnancy and implantation rates were also higher but not significant. However, the live birth rate per transfer was significantly higher.	Authors suggest that other positive changes adopted by the men in both groups attributed to the lack of statistical significance (Hawthorne effect). Other than antioxidant, other possible mechanisms are on cellular responses and survival.	9
Female Infertility—Endometrial Thickness					
Randomized control trial.	103 women undergoing ovarian stimulation with clomiphene citrate.	Group A ($n = 53$) with vitamin E and group B ($n = 50$) without.	Difference in endometrial thickness between groups was significant ($p = 0.001$). Implantation and pregnancy rates did not differ.	Vitamin E may improve endometrial response via antioxidant, anticoagulant (increasing blood supply to follicles and endometrium), and antiestrogenic effects, especially in women with thin endometrium.	10
Randomized control trial.	280 individuals undergoing intracytoplasmic sperm injection (ICSI)	Supplementation with pentoxifylline (PTX, 400 mg twice daily) and vitamin E (tocopherol, 400 IU twice daily) ($n = 140$) versus control (without) ($n = 140$).	After 3 months, endometrial thickness was significantly higher in the treatment group ($p < 0.001$), and pregnancy rate was significantly better in the treatment group versus control (51% v. 40%, $p = 0.003$).	Endometrial thickness attributed to anticoagulant action of vitamin E, increasing blood flow to endometrium.	11

Study Type	Participants	Treatment	Results	Clinical Implications	Ref.
PCOS					
Meta-analysis.	10 RCTs with 504 participants.	Vitamin E supplementation, vitamin E in combination with omega-3, or magnesium on PCOS	Vitamin E supplementation or vitamin E in combination with omega-3 or magnesium in comparison to placebo could significantly reduce serum levels of TG, VLDL, LDL-c, TC, TC/HDL-c ratio, hs-CRP, and hirsutism score, and significantly increase nitric oxide levels (2.79 µmol/L, 95% CI 0.79–4.79). No significant effect was found on HDL-c, glycemic indices, hormonal profile, anthropometric measurements, and other biomarkers of inflammation or oxidative stress.	Antioxidant and lipid-lowering effects.	12

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Natural vitamin E (D-*alpha*-tocopherol) (from non-GMO sunflower) (400 IU)	268 mg AT
Free plant sterols (from non-GMO soy) (including 8 mg *beta*-sitosterol, 4 mg campesterols, and 4 mg stigmasterols)	20 mg
Tocotrienols (from non-GMO palm fruit)	3.16 mg
D-*alpha*-Tocotrienols	24–30%
beta-Tocotrienols	2–4%
gamma-Tocotrienols	30–46%
delta-Tocotrienols	10–20%
Squalene (*Olea europaea*)	45 mg
Mixed tocopherols (from non-GMO soy)	53 mg
D-*alpha*-Tocopherol	7–14%
beta-Tocopherols	0.5–2%
gamma-Tocopherols	45–60%
delta-Tocopherols	13–25%

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