



Hi-Po Emulsi-A™

HIGH-POTENCY LIQUID EMULSIFIED VITAMIN A

30 ML LIQUID | NPN80110372 | HIPOEA-CN

Hi-Po Emulsi-A™ is a standalone vitamin A formula ideal for patients who may benefit from higher doses of this nutrient and who prefer using an easily titrated liquid form rather than capsules or softgels. Just one drop of this highly concentrated formula provides 5000 IU of vitamin A as retinol palmitate (1500 mcg retinol activity equivalents, or RAE).

ROLES OF VITAMIN A IN THE BODY:

- Supports healthy immune function
- Promotes growth and differentiation of cells lining mucous membranes in the respiratory, gastrointestinal and genitourinary tracts
- Needed for proper cell differentiation
- Critical for reproductive function in males and females
- Required for healthy fetal development
- Promotes skin health
- Supports thyroid function
- Needed for steroid hormone synthesis
- Key nutrient for visual acuity and colour vision
- Helps mobilize iron stores and supports red blood cell synthesis

“Vitamin A” refers to a host of related compounds called retinoids—retinol, retinal, and retinoic acid—with retinal and retinoic acid being the “active” forms.^{1,2} The vitamin A found in animal foods is in the form of retinol, also called pre-formed vitamin A. It is a yellow, fat-soluble compound that serves as a precursor to retinoic acid, the most active form of vitamin A in the body. The vitamin A precursors in plant foods are provitamin A carotenoids that include β -carotene, α -carotene, and β -cryptoxanthin. These can all be converted to retinol in the body, but other commonly consumed carotenoids such as lycopene, lutein, and zeaxanthin cannot.^{1,2}

True vitamin A occurs only in animal foods. The aforementioned provitamin A carotenoids can be converted into vitamin A but the efficacy of this is limited overall, varies among individuals, and is influenced by numerous metabolic and hormonal abnormalities. Some individuals may be able to synthesize sufficient vitamin A from carotenoid precursors, but others may be better served by getting pre-formed vitamin A from animal foods and/or supplementation. Supplementation may also be warranted in those with conditions affecting fat malabsorption, such as Crohn’s disease, celiac disease, chronic pancreatitis, or liver or biliary disorders. Heavy alcohol consumption and use of certain pharmaceutical drugs, such as laxatives and bile acid sequestrants (for lowering cholesterol), decrease vitamin A absorption.³

Absorption of β -carotene from plant foods ranges from 5% to 65% in humans.⁴ The bioavailability and vitamin A equivalency of carotenoids are highly variable and are impacted by factors related to the foods themselves and to the health status of the individual consuming them. These include the food matrix, processing techniques, the

concentration of the carotenoid, and the amounts of dietary fat, fiber, and preformed vitamin A in the diet, as well as an individual's vitamin A status, gut integrity, and genetic polymorphisms that affect carotenoid metabolism.⁵ Hypothyroidism and type 2 diabetes are among the common conditions known to impair conversion of carotenoids to vitamin A.^{3,6} Data from the US, Australia, and six European nations indicate that even in industrialized nations where frank malnutrition is rare, an adequate vitamin A intake cannot be achieved through preformed vitamin A or β -carotene alone, but rather, these must be combined.⁷

Immune function

Vitamin A plays a critical role in supporting immune function. Early research on vitamin A led scientists to conclude that anti-infective activity was one of the chief functions of this nutrient.^{8,9} "Immunologists have recognized for decades that vitamin A deficiency is associated with enhanced susceptibility to most infections, and defects in both the innate and adaptive immune systems."¹⁰ Retinoic acid (RA, a vitamin A metabolite) is produced by antigenpresenting cells (APCs), including macrophages and dendritic cells, found in the mucosal interfaces of the skin, digestive tract, urinary tract, and airway, which are the body's first lines of defense against infection. RA may regulate the differentiation, migration, and antigen-presenting capacity of dendritic cells, and the production of RA by APCs is required for the differentiation of naïve CD4 T-lymphocytes into induced regulatory T-lymphocytes (Tregs), which are crucial for maintaining mucosal integrity.¹¹ RA-dependent processes also stimulate production of pro-inflammatory cytokines by effector T-lymphocytes in response to infection. Animal models suggest RA may be beneficial for preventing or treating autoimmune conditions.^{10,12,13}

Much research has been conducted regarding the role of intestinal integrity ("gut permeability") in immune function, specifically with regard to initiation of autoimmune processes. This largely centers around the physical integrity of the gut vis-à-vis tight junctions, but the activity of immune cells located in the intestine may also affect gut-associated immune function, partly under the influence of vitamin-A dependent processes.^{14,15} Retinoic acid has been shown to play a critical role in generating mucosal dendritic cells from bone marrow as well as in the functional activity of these cells.^{16,17} RA is believed to play a role in generating IgA antibody secreting cells that lodge in the small intestinal mucosa.¹⁸

"Vitamin A is central to immune homeostasis in the gut, coordinating both innate and adaptive immunity. RA stimulates the migration of immune cells including dendritic cells, T cells, and B cells to the intestine and helps inform their function. Vitamin A directly regulates proliferation and differentiation in the intestinal epithelium, which is crucial to the maintenance of the gut barrier."¹⁹

OTHER ROLES FOR VITAMIN A

Prenatal development

Adequate vitamin A is crucial for healthy prenatal development¹¹ and has been called "essential for normal reproduction and development."²⁰

Thyroid function

Vitamin A is required for activation of thyroid hormone receptors and insufficient vitamin A may depress thyroid function. Animal models have shown that vitamin A deficiency interferes with thyroid health further upstream, in the pituitary gland. Vitamin A insufficiency increases pituitary synthesis and secretion of thyroid-stimulating hormone (TSH), increases the size of the thyroid gland, reduces thyroid gland uptake of iodine, and impairs synthesis and iodination of thyroglobulin.¹¹

Vitamin A given alone, even in the absence of increased iodine, has demonstrated a positive impact on thyroid function and gland size.²⁴

Medicinal Ingredients (per drop):

Vitamin A (Vitamin A palmitate)..... 1500 mcg RAE (5000 IU)

Non-Medicinal Ingredients: Glycerine, vitamin E, purified water. **Recommended Dose:** Adolescents 9 - 18 years: Take 1 drop per day or as recommended by your health care practitioner. Adults 19 years and older: Take 1 to 2 drops per day or as recommended by your health care practitioner. Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Health care practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage. **Warning:** Not for use by children. Do not exceed the recommended dose or use long term without medical supervision. Excess vitamin A may cause reproductive harm or organ damage.

REFERENCES

For a list of references cited in this document, please visit: <https://www.designsforhealth.com/techsheet-references/hi-po-emulsi-a-references.pdf>

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FOUNDATIONAL HEALTH



Hi-Po Emulsi-A™ is a high-potency formula that delivers concentrated vitamin A in a convenient liquid form. Just one drop of this unique product provides 5000 IU of vitamin A as retinol palmitate (1500 mcg retinol activity equivalents, or RAE).

Vitamin A versus carotenoids

True vitamin A occurs only in animal foods. Compounds called carotenoids, which are found in plant foods, are precursors to vitamin A and can be converted into vitamin A. (You may be familiar with beta-carotene, a carotenoid compound responsible for the orange and green pigments in foods such as carrots, sweet potatoes, cantaloupe, and various leafy greens. Other carotenoids you might be familiar with, such as lutein and lycopene, do not have vitamin A activity.) Carotenoids are not a dependable source of vitamin A for all individuals because absorption of carotenoids from plant foods varies widely and is influenced by numerous factors. These include processing techniques, the concentration of the carotenoid in the food, and the amounts of dietary fat, fiber, and preformed vitamin A in the diet, as well as an individual's vitamin A status and gut integrity. Genetic factors also affect carotenoid metabolism, with some people's bodies converting carotenes into vitamin A more readily than others'. Regarding preformed vitamin A, various health conditions and use of certain pharmaceutical drugs may reduce absorption, so some individuals may benefit from supplementation.

Recommended Dose

Adolescents 9 - 18 years: Take 1 drop per day or as recommended by your health care practitioner.

Adults 19 years and older: Take 1 to 2 drops per day or as recommended by your health care practitioner.

Warning: Not for use by children. Do not exceed the recommended dose or use long term without medical supervision. Excess vitamin A may cause reproductive harm or organ damage.

Immune function

Vitamin A plays a critical role in supporting immune function. Several different types of cells with distinct functions all contribute to a healthy immune system. Vitamin A influences the differentiation and specialization of these cells so that they can perform their unique roles. This key nutrient also contributes to the structural integrity and barrier function of the skin and the lining of the intestines and respiratory tract, which are among the body's first lines of defense against unwanted organisms.

Other roles of vitamin A

Apart from supporting immune function, vitamin A is well known for promoting eye health—specifically, it is required for helping the eyes adjust to different levels of light or darkness and also plays a role in helping to distinguish different colors. Vitamin A is needed for healthy thyroid function and production of thyroid hormones, as well as for supporting mobilization of iron from body stores so it can be incorporated into red blood cells. Vitamin A's influence on thyroid hormones and red blood cells means it may also contribute to cellular energy production (which influences overall energy levels), a healthy metabolism, and a positive mental outlook.

Highlights

- Helps support skin health
- Helps to support the immune system
- Helps to maintain eyesight and in the development and maintenance of night vision
- Helps in the development and maintenance of bones and teeth
- Helps to maintain normal metabolism of iron
- Helps to prevent vitamin A deficiency

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Consult with your health-care practitioner about your specific circumstances and any questions you may have about this product.
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