



# Micellized Vitamin A



## Clinical Applications

- Important Nutrient For Vision.\*
- Supports Immune System Function.\*
- Supports Bone Health.\*
- Healthy Skin\*

*This formulation combines two forms of vitamin A-palmitate and betacarotene that have been micellized into extremely small droplets that are easily absorbed into the bloodstream. Potassium sorbate provides a safe, well-tolerated, and hypoallergenic stabilizing agent for the liquid Micellized Vitamin A preparation. Each drop supplies 1,507 mcg RAE of vitamin A.*

All Adaptogen Research Formulas Meet or Exceed cGMP Quality

## Discussion

Vitamin A is the name of a group of fat-soluble retinoids, including retinol, retinal, and retinyl esters.<sup>1-3</sup> Vitamin A is involved in immune function, vision, reproduction, and cellular communication.<sup>1,4,5</sup> Vitamin A is critical for vision as an essential component of rhodopsin, a protein that absorbs light in the retinal receptors, and because it supports the normal differentiation and functioning of the conjunctival membranes and cornea.<sup>2-4</sup> Vitamin A also supports cell growth and differentiation, playing a critical role in the normal formation and maintenance of the heart, lungs, kidneys, and other organs.<sup>2</sup>

Two forms of vitamin A are available in the human diet: preformed vitamin A (**Retinol** and its esterified form, retinyl ester) and provitamin A **Carotenoids**.<sup>1-5</sup> Preformed vitamin A is found in foods from animal sources, including dairy products, fish, and meat (especially liver). By far the most important provitamin A carotenoid is beta-carotene; other provitamin A carotenoids are alpha-carotene and beta-cryptoxanthin. The body converts these plant pigments into vitamin A. Both provitamin A and preformed vitamin A must be metabolized intracellularly to retinal and retinoic acid, the active forms of vitamin A, to support the vitamin's important biological functions.<sup>2,3</sup> Other carotenoids found in food, such as lycopene, lutein, and zeaxanthin, are not converted into vitamin A.

The various forms of vitamin A are solubilized into micelles in the intestinal lumen and absorbed by duodenal mucosal cells.<sup>5</sup> Both retinyl esters and provitamin A carotenoids are converted to retinol, which is oxidized to retinal and then to retinoic acid.<sup>2</sup> Most of the body's vitamin A is stored in the liver in the form of retinyl esters.

**Retinol and Carotenoid** levels are typically measured in plasma, and plasma retinol levels are useful for assessing vitamin A inadequacy. However, their value for assessing marginal vitamin A status is limited because they do not decline until vitamin A levels in the liver are almost depleted.<sup>3</sup> Liver vitamin A reserves can be measured indirectly through the relative dose-response test, in which plasma retinol levels are measured before and after the administration of a small amount of vitamin A.<sup>5</sup> A plasma retinol level increase of at least 20% indicates an inadequate vitamin A level.<sup>3,5,6</sup> For clinical practice purposes, plasma retinol levels alone are sufficient for documenting significant deficiency.

A plasma retinol concentration lower than 0.70 micromoles/L (or 20 micrograms [mcg]/dL) reflects vitamin A inadequacy in a population, and concentrations of 0.70–1.05 micromoles/L could be marginal in some people.<sup>5</sup> In some studies, high plasma or serum concentrations of some provitamin A carotenoids have been associated with a lower risk of various health outcomes, but these studies have not definitively demonstrated that this relationship is causal.

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**\*These statements have not been evaluated by the Food and Drug Administration.  
This product is not intended to diagnose, treat, cure, or prevent any disease.**



<b>Supplement Facts</b>	
Serving Size 1 Drop	
Servings Per Container 600	
Amount Per Drop	% Daily Value
Vitamin A 1,507 mcg RAE (99.5% (1,500 mcg RAE) as vitamin A palmitate and 0.5% (7 mcg RAE) as beta-carotene)	167%

Other ingredients: Glycerin, purified water, polyethoxylated castor oil, citric acid, and potassium sorbate.

### Suggested Use

1 drop daily with food or beverage or as directed by a healthcare professional.

### Allergy Statement

Free of the following common allergens: milk/casein, eggs, fish, shellfish, tree nuts, peanuts, wheat, gluten, and soybeans. Contains no artificial colors, flavors, or preservatives.

### Caution

If you are pregnant, nursing, have a medical condition, or taking prescription drugs, consult your healthcare professional before using this product. Keep out of reach of children.

### Reference

- 1.Johnson EJ, Russell RM. Beta-Carotene. In: Coates PM, Betz JM, Blackman MR, et al., eds. Encyclopedia of Dietary Supplements. 2nd ed. London and New York: Informa Healthcare; 2010:115-20.
- 2.Ross CA. Vitamin A. In: Coates PM, Betz JM, Blackman MR, et al., eds. Encyclopedia of Dietary Supplements. 2nd ed. London and New York: Informa Healthcare; 2010:778-91.
- 3.Ross A. Vitamin A and Carotenoids. In: Shils M, Shike M, Ross A, Caballero B, Cousins R, eds. Modern Nutrition in Health and Disease. 10th ed. Baltimore, MD: Lippincott Williams & Wilkins; 2006:351-75.
- 4.Solomons NW. Vitamin A. In: Bowman B, Russell R, eds. Present Knowledge in Nutrition. 9th ed. Washington, DC: International Life Sciences Institute; 2006:157-83.
- 5.Institute of Medicine. Food and Nutrition Board. Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. Washington, DC: National Academy Press; 2001.

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