



NANOFORMULATED

# DAILY VITAMIN GUMMIES

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**Quicksilver Scientific's Daily Vitamin Gummies** provide the ultimate blend of bioavailable vitamins in a convenient, great-tasting gummy. Our formula combines activated B vitamins, a suite of fat-soluble vitamins, vitamin C, and carotenoids for well-rounded nutritional support that harmoniously complements a balanced diet.



## Supplement Facts

Serving Size: 4 Gummies  
Servings Per Container: 30

	Amount Per Serving	% Daily Value*
Calories	30	
Total Carbohydrate	8 g	3%
Total Sugars	4 g	**
Includes 4g Added Sugars		8%
Vitamin A (as Retinyl Palmitate, Beta Carotene)	600 mcg RAE	67%
Vitamin C (as Ascorbic Acid)	180 mg	200%
Vitamin D (as Plant-based Cholecalciferol) (D3)	20 mcg	100%
Vitamin E (as Natural Mixed Tocopherols)	4 mg	27%
Vitamin K (as Phytonadione) (K1)	110 mcg	92%
Thiamine (Vitamin B1) (Thiamine HCl)	16 mg	1333%
Riboflavin (as Riboflavin-5-Phosphate)	4 mg	308%
Niacin (as Niacin, Niacinamide)	14 mg	88%
Vitamin B6 (as Pyridoxine HCl)	6 mg	353%
Folate (as Calcium Folate)	1400 mcg DFE	350%
Vitamin B12 (as Cyanocobalamin)	70 mcg	2917%
Biotin	70 mcg	233%
Pantothenic Acid (from Calcium d-Pantothenate)	36 mg	720%
<b>Proprietary Blend</b>	50 mg	**
Phospholipids (from purified sunflower seed lecithin), Trimethylglycine (Betaine), Lycopene, Zeaxanthin, Lutein		

\*Percent Daily Values are based on a 2,000 calorie diet.  
\*\*Daily Value Not Established

**Other Ingredients:** Tapioca syrup, cane sugar, water, citric acid, pectin, glycerin, natural coloring, ethanol, tocopherol, natural flavoring, sunflower oil, carnauba wax, natural citrus oils

## EDUCATION

### MULTIVITAMINS IN THE MODERN WORLD: ARE THEY MORE ESSENTIAL THAN EVER BEFORE?

Despite the plethora of food available 24/7 in our modern-day world, vitamin deficiencies are a burgeoning public health problem. As a society, we are overfed and undernourished, failing to meet our bodies' needs for numerous essential vitamins.

The modern-day diet has left us nutrient-depleted. Ultra-processed foods, which constitute an astonishing 60 percent of calorie intake in the United States (and a growing percentage of calorie intake in other parts of the world), are nutrient-poor foods, providing an abundance of calories with few vitamins or minerals.<sup>1</sup> As well, research indicates that the soils in which we grow our food are increasingly nutrient-depleted due to unsustainable agricultural practices. This means even the most nutritious organic vegetables, meat, and eggs may provide us with fewer nutrients now than they previously did 50 years ago.<sup>2</sup>

According to "What We Eat in America," the dietary assessment portion of The National Health and Nutrition Examination Survey (NHANES), vitamin and mineral inadequacies are extraordinarily prevalent in the United States. Vitamin and mineral inadequacies are defined as nutrient intakes less than the estimated average requirement (EAR), the nutrient intake value estimated to meet the requirement of *half* of the healthy individuals in a particular life stage and gender group.<sup>3</sup> The NHANES data reveals that 94.3 percent of the U.S. population fails to meet the daily requirement for vitamin D, 88.5 percent for vitamin E, 43 percent for vitamin A, and 38.9 percent for vitamin C.<sup>4</sup>

Micronutrient inadequacies can cause vague symptoms, such as fatigue and impaired brain function, making them difficult to identify. However, left unaddressed, micronutrient inadequacies can drive significant physiological dysfunction over the

long term, including sarcopenia and frailty in older adults, cognitive decline, blood sugar imbalances, and compromised bone density.<sup>5,6,7,8</sup> Replenishing depleted vitamins may improve both immediate and long-term health outcomes. In fact, recent research suggests that a daily multivitamin supplement may protect against cognitive decline and improve cognition.<sup>9</sup> Many children and adults in the modern world may benefit from the “nutritional insurance” proffered by a daily multivitamin.

## **BIOAVAILABLE VITAMINS AND CAROTENOIDS PROVIDE “NUTRITIONAL INSURANCE”**

Our modern-day world uniquely stresses our bodies by depleting our nutrient levels and increasing our nutrient needs. By supplying our bodies with bioavailable vitamins and carotenoids through dietary intake and supplementation, we can shore up our nutrient stores and build resilient long-term health.

### **ACTIVATED B VITAMINS**

The form of supplemental B vitamins significantly affects the body's ability to utilize these nutrients. For example, activated forms of folate and B12 are better able to support methylation, the epigenetic mechanism by which a methyl group (CH<sub>3</sub>) is added to a DNA molecule, modifying gene expression. Proper methylation is crucial for brain function, cardiovascular health, and healthy aging.<sup>10,11,12</sup> Activated B vitamins can directly participate in our bodies' methylation pathways without first needing to be processed.

For proper methylation, our bodies need folate, vitamin B2 (riboflavin 5'-phosphate), vitamin B6 (pyridoxine hydrochloride), vitamin B12, and trimethylglycine (TMG), also known as betaine. Vitamin B2 is a cofactor for methylenetetrahydrofolate reductase (MTHFR), an enzyme that converts precursor molecules into active 5-methyl THF, the form of folate critical for methylation. Vitamin B6 is a cofactor for serine hydroxymethyltransferase, the enzyme that creates 5-methyl THF precursors. Vitamin B12 assists in the conversion of homocysteine to methionine, a central component of the methylation cycle. Finally, TMG donates methyl groups to unmethylated molecules, facilitating the entire cycle.

Together, these nutrients keep methylation chugging along without creating a methyl folate “trap,” a scenario in which folate and methylated B12 cannot join together, resulting in impaired methylation. As a result, most people need to consume more methylation nutrients in their diets.<sup>13</sup> Supplementation with an array of methylation nutrients provides nutritional insurance for optimal methylation.

### **VITAMIN C**

Vitamin C is a water-soluble vitamin that can be found in modest amounts in certain types of fresh produce, including citrus fruits, strawberries, bell peppers, and broccoli. Vitamin C has antioxidant properties, protecting the body against free radical damage. It also supports optimal immune function and modulates gene expression.<sup>14,15,16</sup> Chronic stress depletes vitamin C, rendering the body more susceptible to infection.<sup>17,19</sup> While vitamin C is prevalent in fresh fruits and vegetables, supplementation may be necessary when clinical outcomes, such as improvements in immunity, are desired.<sup>18</sup>

### **VITAMIN E**

The vitamin E family includes two compounds, tocopherols and tocotrienols. The primary forms of tocopherols in the diet are  $\alpha$ -tocopherol and  $\alpha$ -tocopherol. Both types of tocopherols offer potent antioxidant properties, particularly within the lipid membranes of cells and organelles.

A significant percentage of the U.S. population, 88.5 percent to be exact, fails to meet the EAR for vitamin E and may thus be at an increased risk of experiencing oxidative stress and inflammation.<sup>19</sup> Conversely, sufficient intake of tocopherols may support cardiovascular health, including healthy vasculature and blood lipid levels, promote balanced immune system function, and protect healthy liver function.<sup>20</sup>

### **VITAMIN D**

Vitamin D is labeled as a vitamin, but it is actually a pro-hormone with pleiotropic effects on human health. It plays vital roles in bone formation and integrity and cardiovascular health, aids both the innate and adaptive branches of the immune system, protects against dental caries, and promotes healthy brain function.<sup>21,22,23,24,25</sup>

Nearly 40 percent of Americans are frankly deficient in vitamin D; many more have insufficient vitamin D levels below the optimal range of 40-60 ng/mL.<sup>26</sup> For many people, vitamin D supplementation is necessary to achieve optimal levels of this vital nutrient.

### **VITAMIN K1**

Vitamin K1 is a fat-soluble vitamin found predominantly in dark green leafy vegetables, such as kale, spinach, broccoli, and brussels sprouts. It regulates blood coagulation factors II, VII, IX, X, protein C, and protein S; a bone-forming protein called

osteocalcin; and matrix-GLA protein, which prevents the calcification of soft tissues inside the body.<sup>27</sup> Insufficient vitamin K1 intake can compromise cardiovascular health and bone structure while also driving the abnormal calcification of soft tissues, such as coronary arteries.

## **VITAMIN A**

The vitamin A family comprises preformed vitamin A, which includes retinol, retinal, and retinoic acid, and vitamin A precursors called carotenoids. For many people, the conversion of carotenoids to active vitamin A inside the body is inefficient, necessitating dietary and supplemental intake of preformed vitamin A.<sup>28</sup>

Preformed vitamin A is essential for proper immune function, including antiviral defenses, vision, and skin health.<sup>29,30,31,32</sup> Vitamin A also works alongside vitamin D to modulate gene expression.<sup>33</sup>

## **CAROTENOIDS**

The carotenoids lutein, zeaxanthin, and lycopene are phytochemicals rather than vitamins. Even though they are nonessential nutrients, carotenoids offer distinct health benefits. They activate Nrf2, a cellular antioxidant pathway that protects cells against oxidative stress and inflammation.<sup>34,35,36</sup> Lutein and zeaxanthin can also cross the blood-retina barrier, supporting healthy vision in children and protecting against age-related declines in vision.<sup>37</sup> Finally, lycopene may support cardiovascular health and protect against aberrant cell growth that, left unchecked, can promote cancer development.<sup>38</sup>

**Quicksilver Delivery Systems**<sup>®</sup> improve upon liposomal and emulsification technology with smaller, more stable particles made from the highest-grade ingredients available. In addition to exceptional absorption rates, these tiny liposomal and nanoemulsified particles increase diffusion across mucous membranes, enhance lymphatic circulation of nutrients and support cellular delivery.