

# INGREDIENT GLOSSARY

## XFACTOR PLUS INGREDIENTS

### **Vitamin A (as beta carotene and retinyl palmitate)**

Vitamin A is a fat-soluble vitamin that plays an important role in skeletal development, healthy vision, immune function and healthy skin. Xfactor Plus utilizes two sources of vitamin A: retinyl palmitate—a bioavailable form that is more easily absorbed by the body, and beta-carotene—a carotenoid that is converted in the body to retinyl. By using these two sources your body quickly absorbs retinyl palmitate and only converts the amount of beta-carotene needed to ensure your body gets optimal levels of vitamin A.\*

### **Thiamine as Vitamin B1 (as thiamine mononitrate)**

Thiamine is an essential water-soluble vitamin. Every cell of the body requires vitamin B1 to form adenosine triphosphate (ATP), which is what your body uses for energy, the metabolism of carbohydrates, proteins and fats and normal muscle function, including the heart muscle. Thiamin is also required for a healthy nervous system and assists in the production of the neurotransmitter acetylcholine and gamma-aminobutyric acid (GABA) and needed for good brain function. Thiamine mononitrate is used in XFactor Plus because of its bio-identical benefits.\*

### **Riboflavin as Vitamin B2 (as riboflavin 5-phosphate sodium)**

Riboflavin is a water-soluble vitamin that is an important cofactor for the formation of other B-Vitamins. Riboflavin helps in the release of energy from foods. It supports both the nervous system and normal growth. Riboflavin is in the free form, and must be converted to its active form – riboflavin 5-phosphate – to be utilized by the body. Riboflavin-5-phosphate sodium is considered the most bioactive form of vitamin B2 and is included in XFactor Plus.\*

### **Niacin as Vitamin B3, (as niacinamide)**

Niacin is a water-soluble vitamin that is necessary for many aspects of health and growth. Niacin is required for cell respiration and helps release the energy in carbohydrates, fats, and proteins. It supports proper circulation, healthy skin, nervous system, and digestion. Nicotinamide found in XFactor Plus is a non-flushing form of vitamin B3.\*

### **Pantothenic acid as Vitamin B5 (as d-calcium pantothenate)**

Panthenic acid is a water-soluble vitamin that is a precursor

in the synthesis of coenzyme A, which is essential to many biochemical reactions that sustain life and play a role in the breakdown of fats and carbohydrates for energy. d-Calcium pantothenate is included in XFactor Plus because as a salt it allows for better absorption than pantothenic acid in the digestive tract.\*

### **Vitamin B6; also referred to as Pyridoxine (as pyridoxal 5-phosphate and pyridoxal hydrochloric acid)**

Vitamin B6 is necessary for the transformation and utilization of amino acids for many functions in the body, including energy production and neurotransmitter synthesis. Vitamin B6 is also involved in the production of hemoglobin, and is a vital component in the formation of the myelin sheath that surrounds nerve cells. It has been recommended as a nutrient to enhance mental function, specifically mood, and it supports normal nerve conduction. Vitamin B6, when taken with folic acid, has been shown to promote optimal cardiovascular health.

Pyridoxine must first be converted to pyridoxal 5-phosphate to be utilized by the body, a process that takes place in the liver. Individuals with compromised liver function have difficulty making this conversion and consequently may be at risk of a vitamin B6 deficiency. Pyridoxal 5-Phosphate is the most bioactive form of vitamin B6 and used in XFactor Plus.\*

### **Biotin also referred to as Vitamin B7 (as d-biotin)**

Biotin is an essential water-soluble B vitamin that assists in metabolism of fatty acids and utilization of B vitamins. It is important in energy producing steps during metabolism in the cells of the body. Biotin also helps strengthen hair and nails. d-Biotin is the naturally occurring and biologically active form of Biotin; among 8 different isomers, only d-biotin has vitamin activity. XFactor Plus utilizes d-biotin.\*

### **Vitamin B12 (as Methylcobalamin)**

Vitamin B12 is a water-soluble B vitamin. Vitamin B12 is essential for metabolism of fats and carbohydrates and the synthesis of proteins. It is also essential to the formation of methyl donors involved in cardiovascular function, red blood cell formation, mood and nerve function. Vitamin B12 works closely with folate to help make red blood cells and to help iron work better in the body. Vitamin B12 can only be found in animal products, with small amounts derived from fermented soy products such as miso and tempeh, and peanuts. It is essential that vegetarians consume a vitamin B12 supplement to

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maintain optimal health. Vitamin B12, when ingested, is stored in the liver and other tissues for later use. Most vitamin B12 supplements contain cyanocobalamin, however the liver must first “detoxify” the cyanide molecule to form methylcobalamin from the cyanocobalamin. Methylcobalamin found in XFactor Plus is already in the bioactive, tissue-ready form. Methylcobalamin is the most bioavailable form that is used most efficiently by the body.\*

#### **Folate as Vitamin B9 (as L-methylfolate, calcium, 5-MTHF)**

Folate is an essential water-soluble B vitamin. Folate is essential for cell replication and growth assisting in the normal utilization of amino acids and proteins, as well as supporting formation of building blocks of DNA and RNA, which is necessary for all body functions. Folate plays a key role by boosting the benefits of B12 supplementation. These two B vitamins join forces and work together in maintaining normal red blood cells. This works toward supporting a healthy cardiovascular and nervous system. Because deficiencies of folate have been linked to low-birth-weight infants and neural tube defects, folate requirements double during pregnancy. The Centers for Disease Control and Prevention recommends folate supplementation for all women of childbearing age because the biggest need is during the first trimester, when a woman may not even be aware she is pregnant. Folic acid must be converted to its active forms to be used by the body. Furthermore, up to 40-percent of the U.S. population may have a genetic enzyme defect that makes it difficult for them to convert folic acid into active 5-MTHF. XFactor Plus uses the most bioactive form of folate L-methylfolate (5-MTHF).\*

#### **Vitamin C (as ascorbic acid and ascorbyl palmitate)**

Vitamin C is an essential water-soluble vitamin that helps with a range of functions in the body, including a healthy immune system, promoting cardiovascular health, and providing an antioxidant defense. It is also needed to make collagen, a substance that strengthens many parts of the body, such as muscles and blood vessels. Ascorbyl palmitate is a fat-soluble form of vitamin C, which is better absorbed than ascorbic acid, the water-soluble form. It is an amphipathic molecule, meaning one end is water-soluble and the other end is fat-soluble. This dual solubility allows it to be incorporated into cell membranes. When incorporated into the cell membranes ascorbyl palmitate has been found to protect them from oxidative damage and to protect a-tocopherol (a fat-soluble antioxidant) from oxidation by free radicals.\*

#### **Vitamin D3 (as cholecalciferol)**

Vitamin D is a fat-soluble vitamin that aids in the absorption of calcium and helps maintain normal blood levels of calcium and phosphorus. Vitamin D works with calcium to promote bone

density. Vitamin D also contributes to the digestive system, bone and the immune system function. There are several forms of vitamin D but the form primarily utilized by the human body is cholecalciferol (vitamin D3) which is the bioavailable form used in XFactor Plus.

#### **Vitamin E (as d-alpha tocopherol)**

Vitamin E is an essential fat-soluble vitamin that is a powerful immune-boosting antioxidant, and is known to promote cardiovascular health. In turn, vitamin E protects cell membranes from free radical damage and helps in the maintenance of good health. The natural-derived form of vitamin E, known as d-alpha tocopherol, is derived from non-GMO sunflower oil and used in XFactor Plus. This form is the most bioactive and is better absorbed and retained in the body.\*

#### **Vitamin K – (as phytonadione [K1] and menaquinone-7 [K2])**

Vitamin K is an essential fat-soluble vitamin and is important for proper bone growth. Vitamin K is also essential to bone and cardiovascular system health. There are several forms of vitamin K – vitamin K1 is present in green leafy vegetables; Vitamin K2 is a more bioavailable form of vitamin K, important for both bone and heart health and often missing from western diets. Plexus XFactor Plus™ utilizes both vitamins K1 and K2. Vitamin K2 is naturally derived and comes directly from the fermentation of *Bacillus subtilus natto*.\*

#### **Calcium (as calcium citrate)**

Calcium is an essential mineral that is necessary for the development maintenance of strong bones and teeth. Calcium citrate is a highly absorbable form of calcium and found in XFactor Plus.\*

#### **Magnesium (as magnesium hydroxide): From – Aquamin Mg**

Magnesium is an essential mineral and is present in all cells in the body. Magnesium is involved in over 300 enzymatic processes, and is required for release of energy. XFactor Plus utilizes magnesium from a natural marine source that also contains over 50 trace minerals.\*

#### **Zinc (as zinc citrate)**

Zinc is an essential trace mineral that is involved in over 300 different enzyme reactions, and is essential for growth, immune system function, testosterone metabolism, and many other functions in the body. Zinc helps support normal healing and the immune function. Zinc has been found to play a role in digestion, energy production, growth, collagen synthesis, bone strength, and cognitive function. Thus, XFactor Plus utilizes Zinc citrate which is highly bioavailable.\*

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### **Selenium (as l-selenomethionine)**

Selenium is an essential trace mineral and a constituent of the antioxidant enzyme glutathione peroxidase, which is necessary for neutralizing free radicals. Selenium supports healthy heart, eye, liver, thyroid and immune function. XFactor Plus uses L-selenomethionine, which is a highly bioavailable form of selenium derived from selenium chelated to the amino acid methionine.\*

### **Copper (as copper citrate)**

Copper is an essential trace mineral for bone, connective tissue, cardiovascular, metabolic, neurological and skin health. Copper activates enzymes important to energy metabolism and assists in the formation of hemoglobin and red blood cells. XFactor Plus uses Copper citrate, a highly bioavailable form of copper. It also helps form collagen, a key part of bones and connective tissue.\*

### **Manganese (as manganese citrate)**

Manganese is an essential trace mineral that helps activate and synthesize important enzymes that involve skeletal, bone and connective tissue health and cellular integrity, energy production and immune function. XFactor Plus uses Manganese citrate, a highly bioavailable form of manganese.\*

### **Chromium (as chromium polynicotinate)**

Chromium is a trace mineral essential for health and wellbeing, involved in the metabolism of carbohydrates, lipids, and proteins. Chromium is involved in the metabolism of glucose, helping to facilitate glucose transport into cells. XFactor Plus utilizes Chromium polynicotinate which is more bioavailable and efficacious than chromium chloride. Chromium is also found in Plexus Slim® and Plexus Block™ and may be safely taken daily at levels up to 1,000 mcg.\*

### **Molybdenum (as molybdenum glycinate)**

Molybdenum is an essential trace mineral that assists enzymes in breaking down fats and carbohydrates. Molybdenum also is a cofactor in three important enzymatic reactions that contribute in the breaking down of toxins that build up within the liver. XFactor Plus utilizes Molybdenum glycinate which is a highly absorbable form of molybdenum.\*

### **Boron (as boron glycinate)**

Boron is a trace mineral that promotes healthy nutrient and hormone utilization. Boron, along with other minerals, plays an important role in healthy bones and joints. XFactor Plus utilizes Boron glycinate which is a highly absorbable form of boron.\*

### **Vanadium (as vanadyl sulfate)**

Vanadium is a trace mineral needed by the body in small

quantities. The primary role of vanadium is the formation and maintenance of teeth and bones. It is also involved in the production of hormones, and in normal growth. XFactor Plus utilizes vanadyl sulfate because it is a more bioactive form.\*

### **Grape seed (*Vitis vinifera*) extract (Standardized to 85% polyphenols)**

Grape seed extract is derived from red grape seeds, and it contains a vast array of health-giving ingredients, such as polyphenols (which come mainly in the form of proanthocyanidins). Grape seed extract offers excellent cardiovascular and circulatory system support, and helps maintain blood pressure and lipid levels, already in the normal range. Further, a recent well-designed multi-center clinical study found that grape seed extract significantly improved the quality of life, uncomfortable symptoms of menopause, such as hot flashes, difficulty with sleep, nervousness, and tiredness, while increasing muscle mass in menopausal women aged 40 to 60 years after 8 week supplementation. Grape seed acts as a powerful antioxidant which helps protect the body against free radical damage and promote skin health.\*

### **Apple (*Malus pumila*) fruit extract (Standardized to 60% polyphenols)**

Apple contains a wide variety of polyphenols and is included in the proprietary polyphenol blend in XFactor Plus for its overall health and Microbiome activating benefits.\*

### **Cranberry (*Vaccinium macrocarpon Aiton*) fruit powder**

Cranberry is a fruit high in antioxidants, partly from substances called proanthocyanidins, which give cranberries their vibrant color.\*

### **Aloe Vera (*Aloe barbadensis*) (inner leaf fillet) extract**

Aloe Vera contains various carbohydrate polymers, notably polysaccharides, along with a variety of amino acids, fatty acids, minerals and enzymes.\*

### **Blackcurrant (*Ribes nigrum L.*) fruit extract (35% anthocyanins)**

Blackcurrant is considered a “superfruit”, a rich source of anthocyanins, phenolic compounds belonging to the flavonoid family, and is known for its antioxidant properties.\*

### **Resveratrol (*Polygonum cuspidatum Sieb.*) extract**

Resveratrol is a polyphenolic compound primarily found in red wine and grapes and is known to be an antioxidant. *Polygonum cuspidatum* is an herb that is considered one of the richest known sources of resveratrol.\*

### **Sodium copper chlorophyllin**

This is used in XFactor Plus to make our vegetarian capsule

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green. Sodium copper chlorophyllin is a mixture of water-soluble sodium copper salts derived from chlorophyll, which is the pigment that gives plants and algae their green color.

### **Hypromellose (vegetarian capsule)**

The vegetarian capsule shell used in XFactor Plus is made from hypromellose, derived from pine trees. This capsule shell is non-GMO, vegan, kosher and halal.

### **Microcrystalline cellulose**

Cellulose is the structural component of the primary cell wall of green plants, a fine powder used as a filler that the body can break down to absorb at the cellular level.

### **Silica**

Silica is added to the powder mixture to ease the flow of the material through the manufacturing equipment, and to remove moisture and prevent the powder from clumping.

### **Sunflower oil**

Sunflower oil is extracted from the seeds of the sunflower. This is used as a natural lubricant/excipient to help prevent sticking to metal contact surfaces during encapsulation.

## **SOURCES**

- <sup>1</sup> <http://www.hathernacupuncture.co.uk/supplement/>
- <sup>2</sup> <https://consumer.healthday.com/public-health-information-30/centers-for-disease-control-news-120/only-1-in-10-americans-eats-enough-fruits-and-veggies-cdc-701213.html>
- <sup>3</sup> Fulgoni VL, Keast DR, Bailey RL, Dwyer J. Foods, fortificants, and supplements: where do Americans get their nutrients? *J Nutr* 2011;141:1847–54.
- <sup>4</sup> Wallace TC1, McBurney M, Fulgoni VL 3rd. Multivitamin/mineral supplement contribution to micronutrient intakes in the United States, 2007-2010. *J Am Coll Nutr*. 2014;33(2):94-102.
- <sup>5</sup> <http://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/81648>
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## **ADDITIONAL CLINICAL STUDY REFERENCES**

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