**Vitamins and Mineral supplements**

Vitamins and Minerals are vital micronutrients that are needed in the body for the proper functioning of the different systems in our body. Unfortunately, these micronutrients are not produced in the body and so are derived from the food we eat.

**Morning vitamins and Mineral supplements**

1. **Vitamin B12 (Cobalamin)**

This is a water-soluble vitamin that helps in red blood cell production, aids cognitive thinking, prevents congenital abnormalities in developing fetus, aids normal functioning of the nervous system, and modulation of DNA synthesis.

*Dietary sources* – eggs, cheese, yogurt, fish

Vitamin B12 should be taken on an empty stomach with a glass of water.

1. **Vitamin A**

This is an essential fat-soluble vitamin that gives you healthy and moist skin by preventing follicular hyperkeratosis, reduces the risk of cancer, promotes growth and development, prevents infections, night blindness, and fertility issues.

*Dietary sources* – fatty fish, milk, cheese, broccoli, spinach, turnip greens, and eggs.

Vitamin A should be taken with food preferably a fat-containing meal for better absorption.

1. **Vitamin D**

Although it is a vitamin, Vitamin D can be produced in the body via exposure to sunlight. Some of the benefits of Vitamin D include:

* It assists in the development of healthy bones and teeth
* Improves and supports the immune and nervous systems
* In the management of diabetes via regulation of insulin levels
* Reduces the chances of developing preeclampsia in pregnancy
* Supports lungs, cardiac functions, and influences the expression of genes involved in cancer development

*Dietary sources* – milk, mushrooms, egg yolks, cheese, fatty fish.

Vitamin D is well absorbed when taken with a high-fat diet.

1. **Vitamin E**

It is a fat-soluble vitamin, an essential ingredient in most skincare creams and ointments. The benefits include prevention of inflammation, promoting eye care, lowering the risk of cancer development, supporting the immune system, and preventing coronary heart disease.

Dietary sources – Almonds, pumpkin, red bell pepper.

Vitamin E is to be taken with food due to its fat-soluble nature

1. **Vitamin K2 (Menaquinone)**

This is a powerful essential nutrient that may not be popular especially in the western diet. Its benefits include; reduces the risk of heart disease, preventing osteoporosis and fractures, promoting good dental health, improves the survival rates in cancer patients.

*Dietary sources* – egg yolks, and sauerkraut

Vitamin K2 should be taken with fat-containing food for better absorption

1. **Quercetin**

This is a pigment that is found in a group of plant compounds called Flavonoids. It functions as an antioxidant to neutralize free radicals which cause damage to the cells. The benefits of quercetin are; reduces inflammation, acts as an anti-allergenic, may possess anti-cancer effects, lowers the risk of brain disorder, and reduces high blood pressure.

*Dietary sources* – peppers, onions, tomatoes, red leaf lettuce, green tea, broccoli.

Quercetin should be taken with water or juice. Vitamin C helps to enhance absorption.

1. **Vitamin C (Ascorbic acid)**

An essential water-soluble vitamin that helps in the production of collagen and some neurotransmitters, helps in absorption of iron, boosts the immune system, aids in wound healing, and acts as an antioxidant in mopping up free radicals in the body.

*Dietary sources* – potatoes, green peas, spinach and green leafy vegetables, green peppers.

Vitamin C is taken 30-45 minutes before a meal for better absorption

1. **Chondroitin Sulphate**

Chondroitin sulphate is a vital supplement and a compound found in the cartilage. It has been beneficial in providing relief from osteoarthritis pain, improving functions of the joints, and protecting the eyes during cataract surgery. It is commonly used with glucosamine and MSM (methylsulfonylmethane). Sometimes this requires a twice or three times per day regiment, so best to begin with your first meal of the day.

*Dietary sources* – fish cartilage, shark cartilage

Chondroitin sulphate is preferably taken with food to increase absorption.

1. **Iron**

Iron is an essential mineral needed in the body for different functions. It plays a vital role in the transportation of oxygen in the blood to different tissues and organs, boosts the immune system, for better pregnancy outcomes, regulation of body temperature, production of enzymes and hormones, and promotes growth and development.

*Dietary sources* – fish, spinach, and beans.

Iron is better absorbed on an empty stomach.

1. **Probiotics**

These are good live bacteria that naturally live in the body. Probiotic supplements help introduce these good bacteria to your body. The benefits include; breakdown and absorption of drugs, help in food digestion, keeping bad bacteria from taking over the gut, produces some other nutrients.

*Dietary sources* – yogurt, cucumbers, cauliflowers, green beans, sauerkraut, soft cheeses.

Probiotics are highly effective when taken on an empty stomach.

**Evening vitamin and Mineral supplements**

1. **Melatonin**

Melatonin is a hormone produced by the pineal gland. Its uses include treatment of sleep disorders, relief of some type of headache, reduces progression of Alzheimer’s disease, and improving the symptoms of tinnitus.

*Dietary sources* – eggs, fish, legumes, mushrooms, and nuts

Melatonin is best taken at bed-time on an empty stomach.

1. **Omega-3 (EPA & DHA)**

Omega-3 fatty acids are derived from food and contain both docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) which are beneficial in reducing blood pressure, reducing the likelihood of heart attack and stroke. EPA and DHA -- are primarily found in certain fish. ALA (alpha-linolenic acid), another omega-3 fatty acid, is found in plant sources such as nuts and seeds. They are not manufactured in the body.

DHA levels are especially high in retina (eye), brain, and sperm cells.

Not only does your body need these fatty acids to function, they also deliver some big health benefits.

*Dietary sources* – DHA and EPA are derived from fatty fish, such as salmon, mackerel, trout, fish liver oil, oysters, shrimps, sardine, mussels, oysters and crabs. Also found in eggs. Some nuts, seeds and vegetable oils contain another omega-3 called alpha-linolenic acid (ALA).

Omega-3 should be taken alongside a fatty meal to improve its absorption.

1. **Magnesium**

One of the most essential macro minerals in the body. The benefits include; essential for healthy bone formation, maintaining healthy muscles, especially cardiac muscles, helping relieve the pains of migraine headache, playing a role in more than 300 enzymes in the body, and supporting the immune system.

*Dietary sources* – almonds, spinach, avocados, soymilk, black beans, potatoes.

Magnesium supplements should be taken with food to avoid gastrointestinal effects.

1. **Calcium**

Calcium is the most abundant mineral in the body and it plays some vital roles in bone health and development, muscle contractions, cardiovascular system, co-factor for many enzymes, lowers the risk of High blood pressure and Cancer.

*Dietary sources* – yogurt, milk, cheese, green leafy vegetables, nuts, and seeds. Calcium is best taken with food to improve its absorption.

**Micronutrients interactions** – despite each of them playing a different role in the body, some vitamins and minerals do interact with each other to either antagonize or potentiate their actions.

* Vitamin C and B12: both vitamins should not be taken together as some studies have shown that vitamin C could break down vitamin B12 in the gastrointestinal tract thus reducing its absorption.
* Fat-soluble vitamins: Vitamin K absorption in the gut is greatly reduced when taken with other fat-soluble vitamins such as vitamin D and E.
* Magnesium and Calcium: It is advised not to take these mineral supplements together as they may compete with each other for absorption. Thus, you can give some intervals of about two for these supplements.
* Vitamin C and Iron: Taking both supplements at the same time can be beneficial as vitamin C has been observed to improve iron absorption from plant foods.
* Magnesium and vitamin D: Magnesium is important for the absorption of vitamin D and the breakdown of vitamin D in the liver and kidneys. If a person is deficient in magnesium, it becomes very difficult to realize the health benefits of adequate Vitamin D3.
* Omega-3 and vitamin E: These two nutrients are to be taken together as they help to deal with heart disease and keep the cholesterol levels in check. Fish oil and vitamin E share many similar or complementary physiological functions, so taking them together offers several health benefits. Together they help control your body's inflammation levels, and both supplements help fight inflammation.

Sources:

* <https://my.clevelandclinic.org/health/articles/14598-probiotics>
* <https://www.webmd.com/vitamins/ai/ingredientmono-744/chondroitin-sulfate>
* <https://www.healthline.com/nutrition/quercetin>
* <https://www.medicalnewstoday.com/articles/219822>