



Vitamin and mineral supplements

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Introduction

The use of nutritional supplements has increased rapidly over recent years.¹ Supplements are used with the intention of preventing disease.^{2,3} Most healthy individuals do not need supplements if they are able to follow healthy eating patterns.^{2,4} However, there are certain populations that could benefit from supplementation when the need for certain nutrients cannot be met by diet.⁴ Supplements are defined as concentrated sources of vitamins, minerals or other ingredients that are used to supplement a normal diet. Dietary supplements are usually taken orally and are commercially available in many forms such as capsules, powders, pills, and syrups.^{2,4}

Who needs supplements?

The supplement industry has grown considerably in the last 30 years.⁴ Multivitamin products, calcium, vitamin C, vitamin D, fish oil and probiotics are some of the most common supplements used today.⁴ Studies have shown that the use of supplements is highest among those who are in an optimal state of health. In spite of this, there are vulnerable groups within a community that could benefit from dietary supplements.⁴ These include people living in poverty (especially children), women taking oral contraceptives, adolescent women, pregnant women and elderly people. Individuals that are not able to consume a variety of foods such as those following a vegan, calorie-restricted or allergy-restricted diet would also benefit from taking certain supplements. Alcohol abuse and smoking may also be cause for supplementation. Furthermore, those suffering from malabsorptive diseases such as inflammatory bowel disease (IBD) should also consider taking a supplement.⁴ It is important to note that taking supplements in excess or in conjunction with certain medications may be dangerous.⁴ It is therefore important to consult a doctor or dietitian before using these products.

Vitamin and mineral supplements

Vitamins and minerals are micronutrients which are required in small amounts.⁵ Micronutrients should be consumed in quantities

that meet the needs of the body. These amounts are called RDAs (Recommended Daily Allowances).⁵ People take multivitamin and mineral supplements to increase the nutrient levels in their bodies. In cases where individuals are at risk for nutrient deficiencies or require additional nutrients, multivitamins and minerals have been shown to improve overall micronutrient status.⁴ Each micronutrient has its own role to play in the body and supplementation of certain nutrients can be beneficial.

Vitamin A

Vitamin A is a fat-soluble vitamin that performs numerous functions in the body. These include promoting vision, maintaining healthy skin, reproductive function and growth.⁵ Vitamin A is known as an anti-inflammatory vitamin due to its ability to enhance immune function and decrease the severity of various infectious diseases.⁶ Insufficient intake of vitamin A can result in impaired immune function, night blindness and skin problems.⁵ Deficiency of vitamin A may occur from inadequate dietary intake, prolonged malnutrition, fat malabsorption, and various health conditions (e.g. coeliac and liver disease).⁴ Vitamin A supplementation may be beneficial in these cases. However, if taken in excessive amounts, vitamin A can be toxic.⁵

The B vitamins

The B vitamins are water-soluble and are largely involved in regulating the body's metabolism.⁵ Thiamine (vitamin B₁) and riboflavin (vitamin B₂) are essential for the formation of energy and help to maintain nerve and muscle health.⁵ Similarly, vitamins B₃, B₅ and B₆ are required for chemical reactions to occur successfully in the body. Vitamin B₁₂ is essential for normal growth, as well as bone and nerve function.⁵ Vitamin B₁₂ deficiency can occur in diseases that affect the absorption of food.⁵ Although rare, insufficient intake of the B vitamins can result in a variety of problems ranging from skin rashes to cognitive disability.⁵

Vitamin B₆ deficiency is more common and can occur from alcohol abuse as well as the use of certain drugs (e.g. TB medication and oral contraceptives).⁵ Following a balanced diet is the best way to avoid problems related to vitamin B deficiencies. However,

supplements can help to correct deficiencies and promote overall health (particularly B₆ and B₁₂ supplements).⁴ Vitamin B₆ supplements can help treat pregnancy-induced nausea, high blood pressure and kidney stones. Furthermore, vitamin B₆ and B₁₂ supplementation has been shown to reduce the incidence of certain types of anaemia, as well as treat the onset of age-related macular degeneration.⁴

Vitamin C

Vitamin C is another antioxidant vitamin that performs numerous functions in the body and has been shown to assist in wound healing, as well as promote immune system function.⁵ Vitamin C supplements may help to enhance iron absorption, and have shown benefits in cancer prevention, treatment of the common cold, high blood pressure, osteoarthritis and sunburn.⁴

Vitamin D

Vitamin D is a fat soluble vitamin that can be acquired through sun exposure as well as dietary sources.⁵ Vitamin D plays an integral role in bone health by assisting the absorption of calcium and phosphorous.⁵ It also helps to maintain brain and nerve health, and supports the immune system in fighting off infection.⁵ Supplements containing vitamin D can help to correct vitamin D deficiency.⁵

Folic acid

Folic acid (folate) is essential for the DNA synthesis of rapidly growing cells.⁵ This is particularly important during pregnancy. It is therefore advised for women to take folic acid supplements before and throughout their pregnancy.⁵ Folate may also be beneficial in preventing heart disease as well as certain types of cancer.⁵

Zinc

Zinc is a mineral with antioxidant properties. It aids in immune function, blood clotting, wound healing and growth.⁵ Zinc supplements can be effective in helping to treat diarrhoea, anaemia, the common cold and many other conditions.⁴

Other supplements

There are numerous natural substances found in supplements today that may elicit various health benefits. Among these are fish oils, rooibos, ginseng, marigold and bilberry.

Fish oil supplements may play a role in preventing heart disease. There is also evidence to show its effect in treating conditions such as macular degeneration, asthma, attention-deficit hyperactivity disorder (ADHD), high blood pressure and rheumatoid arthritis.⁴

Rooibos is an antioxidant that may be beneficial in combating oxidative stress associated with neurodegenerative diseases.⁷

Ginseng has proven beneficial in preventing and treating metabolic diseases such as menopausal symptoms in women, diabetes and cardiovascular disease.⁸ Another frequently used supplement is lutein which is a yellow pigment found in Marigold flowers. This pigment may have a role in helping prevent certain cancers, eye conditions and heart disease.⁹ Lastly, bilberry extract has been shown to act as a powerful antioxidant and is linked to improving vision, lowering blood sugar and treating conditions associated with inflammation such as heart disease, cancer, diabetes and dementia.¹⁰

Conclusion

Both vitamin and mineral supplements, as well as others, have been shown to be beneficial to health when used correctly. Although it is advised that individuals meet their nutrient requirements through good dietary practices, supplements can help to promote overall health in certain circumstances.

References

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