



Natural sources of vitamin D

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There is a growing attention about vitamin D as a need for health. Vitamin D has the main function in maintaining and regulating calcium levels in the body. Therefore it is important for the development of a healthy body especially it is important for a healthy skeleton. Other than increase in the risk of osteoporosis, vitamin D deficiency has also been linked to an increased risk of autoimmune diseases, diabetes, hypertension, and cancer (1-3).

Vitamin D is synthesized in the skin, however, in most cases a dietary intake of vitamin D is also needed for health. However, the food sources containing vitamin D are scarce. The consequence of limited vitamin D derived from the sun and a low dietary intake of vitamin D is that the general populations fail to meet their vitamin D requirements for their health (2-5).

Vitamin D deficiency in places with limited sun exposure is a problem and in the populations of these places vitamin D supplementation is essential. Dietary recommendations for vitamin D, however, are difficult because few natural foods contain vitamin D. Traditionally, it has been considered that only animal products contain vitamin D, however, vitamin D and its metabolites are also formed in certain vegetables, fruits and plants having the potential to be used as a source of vitamin D3 (3-7).

In this regard, the family of *Solanaceae* has high level of vitamin D, and this family might be considered as a good source for human nutrition of vitamin D. In this plant family there are important vegetable including pepper, tomato and potato (2-8).

Vitamin D is normally synthesized only in minute amounts. This makes it a challenge to study the enzymes and pathways involved in its biosynthesis. However, it should be noted that this matter clears that small changes in vitamin D3 may have a significant impact on human health.

The current knowledge about the vitamin D content of various plants is limited. Therefore, future investigations should elucidate the vitamin D content of different plants (1-5).

In this regard, screening a variety of crops and vegetables

■ Implication for health policy/practice/research/medical education

There is a growing attention about vitamin D as a need for health. Vitamin D has the main function in maintaining and regulating calcium levels in the body. Therefore it is important for the development of a healthy body especially it is important for a healthy skeleton. Other than increase in the risk of osteoporosis, vitamin D deficiency has also been linked to an increased risk of autoimmune diseases, diabetes, hypertension, and cancer.

for vitamin D is valuable. However, for a large screening, development of more sensitive and less time-consuming analytical methods is needed. Development of methods to quantify vitamin D conjugates in details is also essential. The sea inhabitants are the other source of vitamin D. Microalgae are of these sources.

Microalgae with a high natural level of vitamin D might be used as a natural vegetable for the bio-fortification of aqua-cultured fish (2-6).

Nowadays, basic knowledge is limited regarding the biosynthesis of vitamin D in photosynthetic organisms. Therefore, to manipulate the plant to produce a higher amount of natural vitamin D, we should increase our knowledge (7-11).

Biosynthesis of 24-desmethylsterols which are the precursor of vitamin D in plants is complex and poorly understood. Therefore, it makes a great challenge for the final aim to produce plants with a higher vitamin D. The key biosynthetic steps and the enzymes involved in the synthesis of vitamin D in plants are unknown and should be identified for modifying the content of vitamin D3 in plants (4-12).

Author's contribution

MRK was the single author of the paper.

Conflict of interests

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Ethical considerations

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