

HERB & SPICE ALPHABET CHART



LKD

[BOOKLET RESEARCH]

WHAT ARE THE HEALTH OUTCOMES OF PHYTOCHEMICAL SUPPLEMENTS VERSUS FRUITS AND VEGETABLES?

(Raffle inside)

DO YOU WANT TO KNOW WHY?

DO YOU WANT TO GET THE ANSWER?

Phytochemical Supplements Nutrition can be eaten as a meal?

How to choose the fit supplements?

The use of supplements only for all healthcare elderly?

How can phytochemical be proven effective without long-term human trials?

Importance of Plants to Humanity.

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27 Feb 2024

Acknowledgment

Words cannot express my gratitude to my professor Sarah G. and subject librarian Sally P. for their valuable and patient feedback and help.

It is because of my professors that I have had the opportunity to explore phytochemical and nutrition-related topics in depth.

Additionally, this endeavor would not have been possible without the Nutrition 200 course that inspired me.

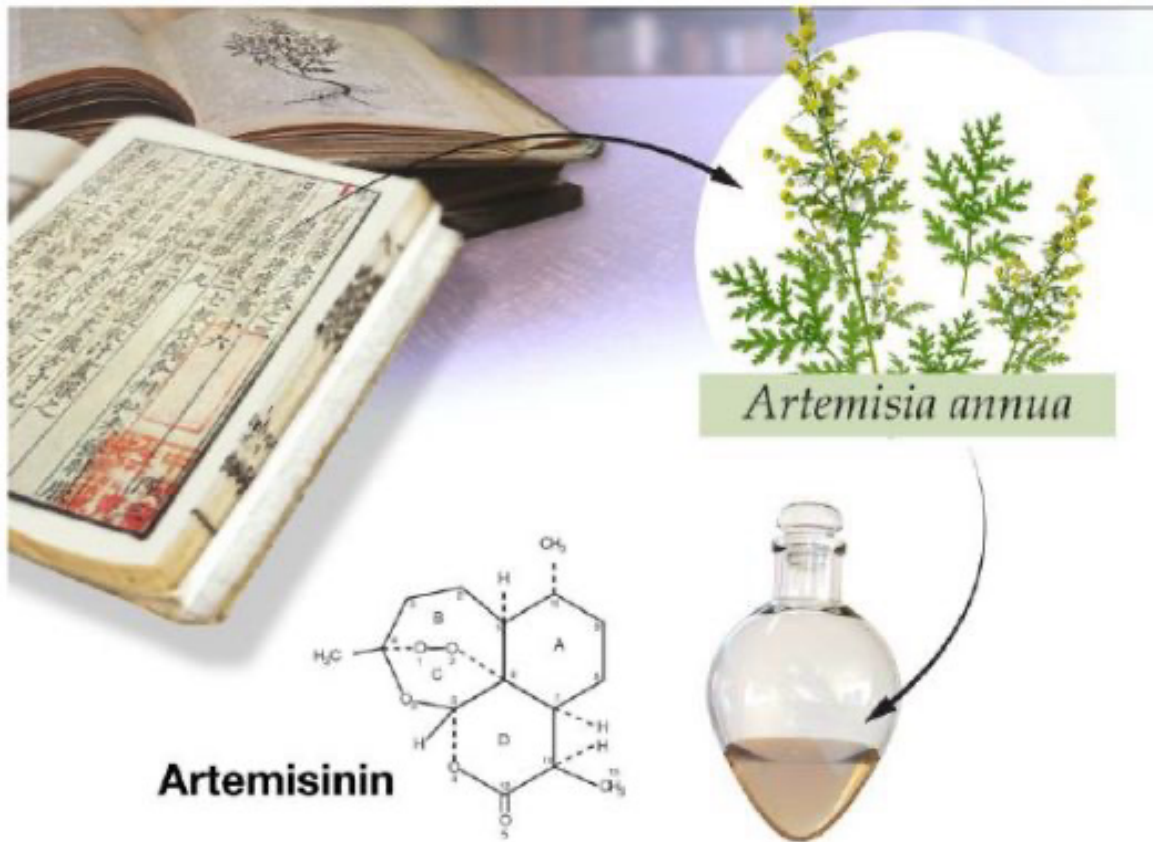
I am also thankful to my classmates for providing me with a lot of peer review feedback support and encouragement.

I would also like to thank the design desk research assistants for giving me practical advice that also taught me a lot.

Finally, I have to mention my family, especially my parents, my sister:

Their faith in me throughout this process has kept my spirits and motivation high.

I would also like to thank my plants and stuffed animals for all the entertainment and emotional support they provided.



Abstract

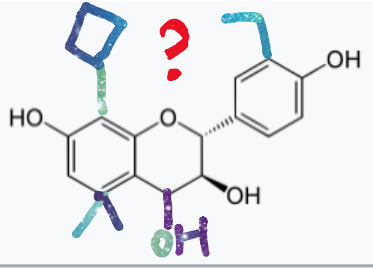
Plants are an essential part of nutrition, medicinal plants play an important role in medicines and are now contributing to manufacture (Rastogi et al., 2016). At the same time, as society continues to progress and stress increases, many people are trying to replace their daily diets with nutrients in an attempt to find a more efficient way of eating, which is something that concerns lots of students who are often too engrossed in my studies to care about eating. In my accidental reading of a nutrition textbook, I discovered that phytochemicals are the source of all these problems.

Phytochemicals are biologically active compounds produced by plants in primary or secondary metabolism to protect them from external threats and thus aid their development and reproduction (Leitzmann, 2016). Most therapies use extracts and active compounds from medicinal plants (Craig, 1999), so I think the nutrients we draw from plants in our daily lives are also relevant. Based on this information, the research topic is the impact of phytochemicals contained in plant traits on human health.

4 Scientifically Supported STATEMENTS: explaining the two-sided nature of Phytochemical Supplements

Firstly, one kind of vegetable or fruit (plants) contains multiple nutrients and is more complete than phytochemical supplements. Consuming more vegetables and fruits is negatively associated with all-cause mortality and mortality from cardiovascular disease and cancer, and studies to date have failed to attribute the health effects of vegetables and fruits to any of their isolated components (Melse-Boonstra 2). So, the author claims that the health benefits of consuming vegetables and fruits should be interpreted as the result of the additive and synergistic effects of their components and cannot be replaced by a single phytochemical (2). That means, in any process of processing or extraction will make the original nutrient phytochemical interactions in the plant disappear, and the part that disappears may be a function that contributes to the health of the body, or it may be more prominent in a particular aspect of the function. I think this is why phytochemical supplements are only used heavily when a person is in a disease state, in order to regulate a function. One specific example is β -carotene, The biotransformation efficiency of the average Western diet is much lower (Melse-Boonstra 6). Based on that, we can infer that access to phytochemical processing is probably related to the cooking method or manufacturing temperature, heat treatment may alter the chemical structure, leading to changes in biological activity (Yancui et al.1), which can also have a positive and negative impact on the original fruits and vegetables.





guibourtinol

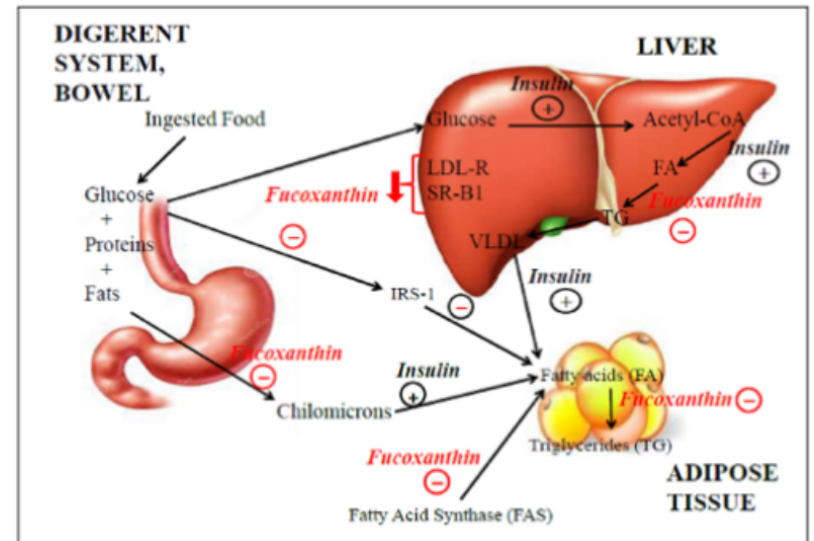
Secondly, there are probably a lot of unknown nutrients. A large proportion of these compounds are still unknown in

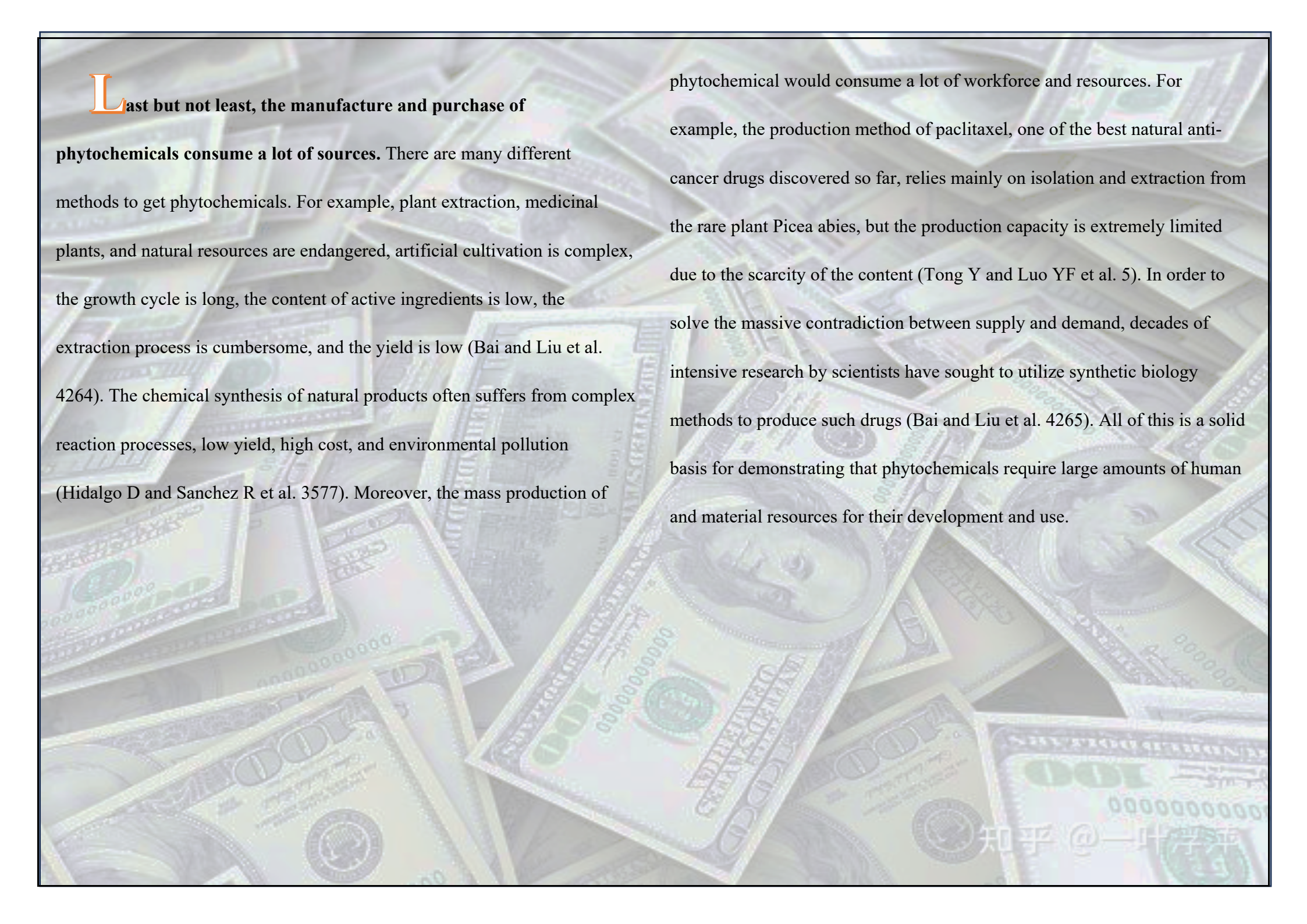
terms of their chemical structure and/or biological role in humans. Approximately 10,000 different phytochemicals have been identified, and a large proportion of these compounds are still unknown in terms of their chemical structure and/or biological role in humans (Taylor et al. 2). According to that, for different people's nutritional needs are not 100% accurate analysis of the

various phytochemicals needed, by eating a variety of fruits and vegetables is a more effective way to maintain nutritional balance. In addition, the metabolic fate of most phytochemicals is poorly understood, and their lack of toxicity to humans is not always clearly demonstrated (Cora et al. 1744).

Thirdly, excessive-high nutrient concentrations can burden the liver's absorptive function and reduce bioavailability. Synthetic sources have been found to be the main cause of hepatotoxicity, but some plants contribute in the same way (Prasad et al. 106). For instance, Lanata Camra Linn causes cholestasis and hepatotoxicity but is effective in removing bilirubin from jaundice and may become a needed class of photochemical supplement (Sharma et al.

313). All in all, many phytochemical supplements have a two-sided nature, with one part triggering lesions in the liver or other parts of the body, while the other part protects the liver and even slows down aging.





Last but not least, the manufacture and purchase of phytochemicals consume a lot of sources. There are many different methods to get phytochemicals. For example, plant extraction, medicinal plants, and natural resources are endangered, artificial cultivation is complex, the growth cycle is long, the content of active ingredients is low, the extraction process is cumbersome, and the yield is low (Bai and Liu et al. 4264). The chemical synthesis of natural products often suffers from complex reaction processes, low yield, high cost, and environmental pollution (Hidalgo D and Sanchez R et al. 3577). Moreover, the mass production of

phytochemical would consume a lot of workforce and resources. For example, the production method of paclitaxel, one of the best natural anti-cancer drugs discovered so far, relies mainly on isolation and extraction from the rare plant *Picea abies*, but the production capacity is extremely limited due to the scarcity of the content (Tong Y and Luo YF et al. 5). In order to solve the massive contradiction between supply and demand, decades of intensive research by scientists have sought to utilize synthetic biology methods to produce such drugs (Bai and Liu et al. 4265). All of this is a solid basis for demonstrating that phytochemicals require large amounts of human and material resources for their development and use.

RAFFLE

Send a comment and share your thoughts to enter the drawing!

Prize: \$10 (More prizes and places will be updated later)

Sweepstakes: 2 people will be drawn every two months, 1 random, 1 selected comments will be direct winners!



How to enter: From now until 2049, send your idea by mail to 1201 NE Campus Pkwy, Lander Hall 758 (Please inquire for specific information on address updates from zrzryl@gmail.com) to recipient Ran Z to be eligible for the drawing, and the results will be notified by mail on the 25th of every other month, and the winners should fill out the information within 5 days.

The final explanation of this activity belongs to RZ.

Analysis and comparison of examples of phytochemical supplements and plant



Garlic

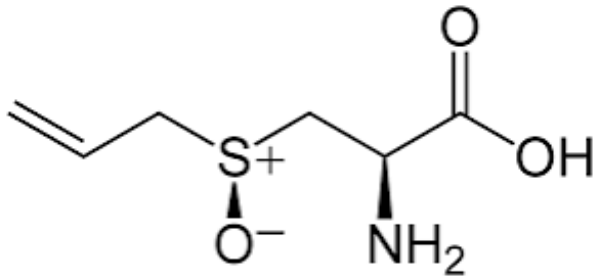


Shallot



Allicin is found in onions and garlic.

Allicin blocks or eliminates certain toxins found in bacteria and viruses (Ankri S, Mirelman D. 1999)



Required daily intake for adults: 150mg.

Allicin content in garlic (fresh vegetable): 1.2%

Equivalent to about 12 grams of garlic.

Basically, it is easy to ensure sufficient intake without additional allicin supplementation.

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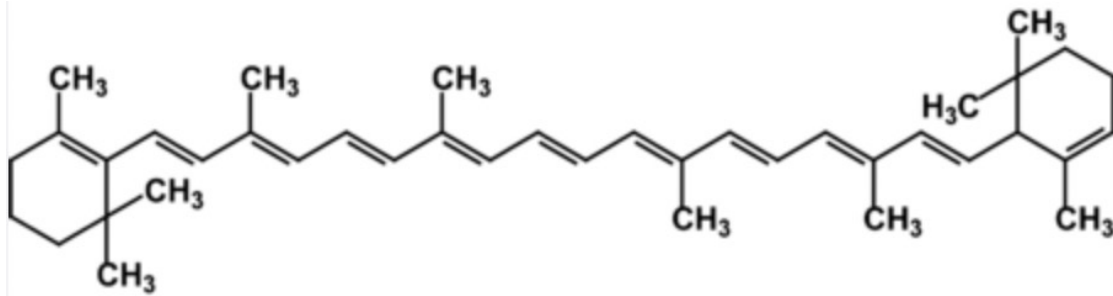
BETA

CAROTENE



Beta-carotene is an antioxidant with a detoxifying effect, an indispensable nutrient for the maintenance of human health, and has significant functions in anti-cancer, prevention of

cardiovascular disease, cataracts and antioxidants, and in turn, prevents aging and many degenerative diseases caused by aging. 50mg is daily suggestion (Healey, Genelle R., et al. 2017).



There is no recommended dietary allowance for phytochemicals. Eat a variety of foods, including plenty of fruits and vegetables, to ensure you are getting adequate amounts in your diet.

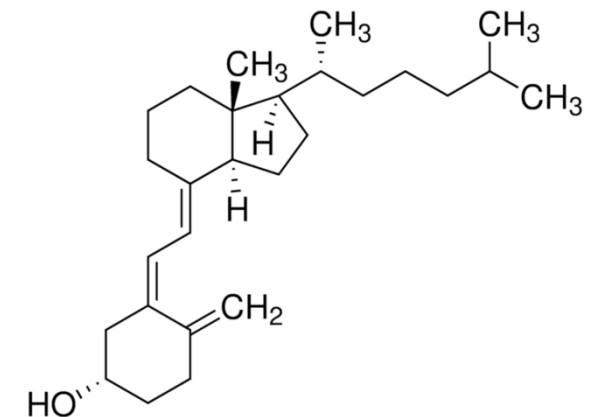


VITAMIN D

Vitamin D has been linked to the risk of various diseases, such as osteoporosis and muscle weakness, as well as autoimmune diseases, diabetes, and cardiovascular disease. In addition to sun exposure, diet is also an important means of supplementing vitamin D. Plant sources include black fungus and mushrooms (shiitake, shiitake or morel mushrooms, etc.), while animal sources include salmon, swordfish, coho salmon, duck, eggs and pig liver (Kaegi-Braun, N. et al. 2021).



It should be supplemented with 50mg a day, but getting it from food is often not enough and can be supplemented with SUPPLEMENT.



Hope We Can Make the World a Better Place



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