

# PLANTS & SEAFOOD: BETTER TOGETHER



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# PLANTS AND SEAFOOD – BETTER TOGETHER

Plant-based diets, such as a Mediterranean-type dietary pattern, that consist of plant foods (cereals, fruits, vegetables, legumes, tree nuts, and seeds), fish, seafood, healthy fats and limited consumption of red meat, are scientifically proven to be one of the best dietary approaches for the prevention of chronic disease and to promote overall health through nutrition.[3, 4, 11]

**PLANTS AND SEAFOOD WORK TOGETHER SYNERGISTICALLY AS ONE OF THE BEST EATING PATTERNS TO MEET AN INDIVIDUAL'S NUTRITION NEEDS AS WELL AS REDUCE THE RISK OF DEVELOPING CHRONIC DISEASES. [1]**

Combining plants and seafood together as part of a regular diet creates a nutrient synergy that fills in nutrient gaps, such as EPA, DHA, Vitamin D, and B12, that can be missing in exclusively plant-based diets and improves absorption of essential nutrients that the body needs. [5]

## HOW ALASKA SEAFOOD COMPLIMENTS A PLANT-BASED DIET:

### EPA and DHA:

Omega 3 fatty acids are important for the health of the brain, retina, cell membranes, healthy pregnancy and to reduce the risk of cardiovascular disease. Few foods contain the essential omega 3 fatty acids, EPA and DHA, and Alaska seafood is one of the best food sources available.

Plants contain the omega 3 fatty acid ALA, which is found in foods such as walnuts, flax, chia, canola and hemp. Additionally, micro-algae-based DHA supplements are good sources. The body's ability to convert ALA to EPA is at a rate of 5% to 15%, and <1% of ALA reliably converts to DHA.[7]

### Unsaturated fat:

Fatty fish such as wild salmon, sablefish, and herring contain heart healthy fats, such as unsaturated fat. Fat is necessary for the absorption of important fat-soluble vitamins such as A, E, D and K. Without fat in an individual's diet, these nutrients are poorly assimilated by the body and can set one up for nutrient deficiencies.



Consuming fatty fish from wild Alaska sources, along with plants and seeds rich in vitamins A, E and K such as red and orange vegetables, green leafy vegetables and sunflower seeds, creates a synergistic effect whereby these nutrients are more readily absorbed by the body.



Consuming foods that contain EPA and DHA, such as wild Alaska seafood, is the best way to obtain these essential fats, making them the perfect accompaniment to a plant-based diet.

## Iron:

Iron is necessary for the production of hemoglobin, which is a component of red blood cells that carries oxygen throughout the body. Insufficient amounts of iron can result in iron deficiency anemia, which can reduce transportation of oxygen to tissues and can lead to symptoms such as fatigue, weakness or difficulty concentrating. Iron can be found in two forms in food, heme and non-heme. Non-heme iron is available from plants, but the availability for absorption varies greatly depending on the meal and the body's physiological need. The larger the body's need, the greater the absorption. Heme iron found in animal sources of foods are readily available and have a higher rate of absorption in the body. To enhance iron absorption, pair iron-rich foods along with foods high in vitamin C.



Combining vitamin C-rich foods such as lemon, leafy greens, tomatoes or bell peppers along with iron-rich wild Alaska seafood creates the perfect synergy of nutrients to enhance the absorption of iron.



## Zinc:

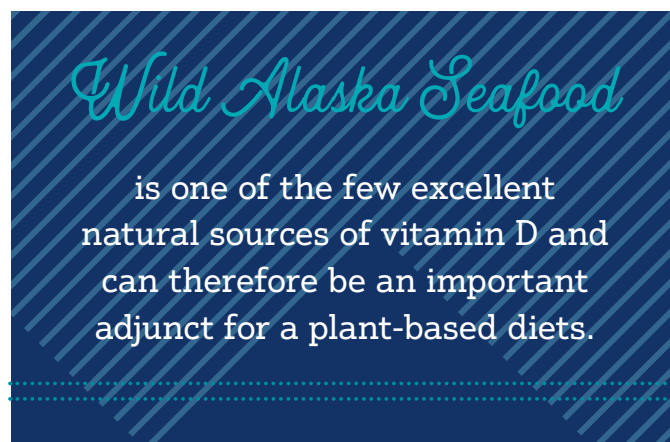
Zinc is involved in numerous aspects of cellular metabolism. It is required for the catalytic activity of approximately 100 enzymes that play a role in immune function, protein synthesis, wound healing, DNA synthesis and cell division. Zinc sources from plants include soy products, legumes, grain, cheese, seeds and nuts. Other plant sources of zinc such as legumes, seeds, nuts, cereals, corn and rice can have a negative effect on zinc absorption due to high phytate levels that impair the absorption of zinc. [11, 12]



Wild Alaska seafood such as oysters (containing 493% of the daily value (DV)) and Alaska king crab (containing 43% of the DV), are excellent sources of highly absorbable zinc. [8, 12, 13]

## Vitamin D:

Vitamin D is often known as an essential nutrient to be consumed in conjunction with calcium for bone health. Vitamin D has many other roles, including its influences in a large number of metabolic pathways, cardiovascular health, and neuromuscular and immune function. Vitamin D is unique as it is the only vitamin that the body makes from the sun and there are very few foods that naturally contain vitamin D. The best foods with naturally occurring sources of vitamin D are oily fish, eggs, beef liver, butter and red meat. Other food sources include foods fortified with vitamin D including cow's milk, nondairy milks, fruit juices, breakfast cereals and margarines. [5].



## B-12:

B-12 is an important vitamin to make healthy blood cells and to keep nerves working properly. B-12 is only available from animal foods, and therefore must be supplemented in individuals following a vegan diet and possibly other vegetarian diets depending on the level of animal product consumption. Including Alaska seafood along with a plant-based diet is an excellent way to ensure an adequate intake of B-12.

## Iodine:

Iodine is a nutrient that is necessary for thyroid function and proper bone and brain development. Salt fortified with iodine is the primary source of iodine in most people's diets. However, adequate intake has been decreasing as processed foods containing unionized salt comprise the vast majority of salt intake in the United States. Alaska seafood such as cod, salmon and shrimp are generally rich in iodine, as are other foods from the sea including seaweed. [14]

## Calcium:

Calcium is the most abundant mineral in the body, with 99% of this mineral being found in bones and teeth.[8] It is also necessary for nerve and muscle function, blood pressure regulation and hormone secretion. There are multiple dietary sources of calcium, with dairy and fortified food items being the most traditional sources in the U.S. diet. Less commonly thought of sources of calcium include beans, nuts and seeds, and animal sources that contain bones.

**A plant-based diet that includes wild Alaska seafood creates the perfect synergy for healthy bones.**

Calcium relies on additional nutrients for optimal absorption and deposition into bones. Some of these nutrients include magnesium, vitamin D, and vitamin K (especially K2).[9]

One strategy for increasing nutrients to improve bone health is to include canned salmon with bones, which is an excellent source of calcium and vitamin D, along with leafy greens such as kale or arugula, which are excellent sources of magnesium and vitamin K. This combination of nutrients creates the ultimate synergistic environment for calcium absorption and strong bones.

## IMPROVE BONE HEALTH



**CANNED SALMON WITH BONES, ALONG WITH LEAFY GREENS SUCH AS KALE OR ARUGULA, WHICH ARE EXCELLENT SOURCES OF MAGNESIUM AND VITAMIN K.**

## Selenium:

Selenium has an important role as a necessary cofactor for the production of glutathione, which is considered to be the master antioxidant in the body that protects against oxidative stress. [10] Additionally, selenium binds and safely eliminates heavy metals, including mercury, cadmium and thallium.[3] Some of the best sources of selenium come from the sea, such as wild Alaska seafood, that also include nutrients such as being a complete protein, vitamin D, vitamin B-12, and the essential omega 3 fatty acids, DHA and EPA. There are also plant-rich sources of selenium such as brazil nuts, spinach and grain grown in selenium rich soil. Combining wild Alaska seafood along with a plant-rich diet works synergistically to provide necessary nutrients such as selenium and phytonutrients to reduce oxidative damage and stress in the body.

## FOOD SYNERGY:

Combining wild Alaska seafood that has a higher fat content such as Alaska king salmon or sablefish along with foods high in vitamin A such as bell peppers, sweet potatoes, spinach, carrots or broccoli helps your body absorb the vitamin A.

ADD ROASTED BROCCOLI *or*  
SWEET POTATOES *to your meal*



Combining wild Alaska seafood that has a higher fat content such as Alaska king salmon or sablefish along with foods high in vitamin E such as sunflower seeds, almonds, pine nuts or spinach will help your body absorb vitamin E.

ADD SUNFLOWER SEEDS TO YOUR  
SPINACH SIDE SALAD WITH  
4-OUNCES OF GRILLED  
SALMON



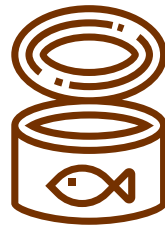
Add wild Alaska fish or seafood to your plant-based diet 2-3x/week to ensure adequate intake of B12 to support healthy DNA and nerve function and fill nutrient gaps in plant-based diets. Shellfish such as Alaska King, Snow, or Dungeness Crab are especially good sources of B12.

Shellfish can provide

~150% OF THE DV  
(DAILY VALUE) FOR B12

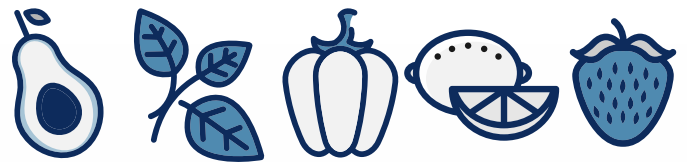


Consuming canned salmon with bones is an excellent way to add calcium and Vitamin D to a plant-based diet. A 4-ounce serving contains approximately 200 mg of calcium, meeting 20 percent of the DV. Canned salmon is extremely versatile as well. Try adding salmon burgers or patties, salmon and veggie fried rice, salmon meatballs with sweet potato or salmon avocado boats made from canned salmon to your next meal.



ADD SALMON MEATBALLS  
WITH SWEET POTATO OR  
SALMON AVOCADO BOATS  
MADE FROM CANNED SALMON  
TO YOUR NEXT MEAL

Combine wild Alaska seafood that are good sources of heme iron along with foods high in vitamin C to enhance iron absorption. Combinations could include cod stuffed with **CREAMY SPINACH**, fish tacos with **BELL PEPPERS**, adding **LEMON** to fish, or fish tacos with **STRAWBERRY** and **AVOCADO** salsa.



For optimal bone health, consume calcium and vitamin D rich canned wild Alaska salmon with bones along with foods high in vitamin K2 such as egg yoks, butter and cheese. Vitamins A and D are both activated by vitamin K2. Make eggs benedict using canned salmon, a poached egg, hollandaise sauce and topped with arugula for a meal packed with calcium, vitamin D, vitamin K2 and vitamin A.



VITAMIN D, VITAMIN K2  
AND VITAMIN A



## SOURCES

1. Jacobs D.R., Tapsell L.C. "Food synergy: the key to a healthy diet." *Proceedings of the Nutrition Society* (2013), 72, 200-206
2. Jacobs D.R., Tapsell L.C., Temple, N.J. "Food Synergy: The Key to Balancing the Nutrition Research Effort." *Public Health Reviews*, (2012), Vol. 33, No 2
3. Whanger, P. D. "Selenium in the treatment of heavy metal poisoning and chemical carcinogenesis." *Journal of trace elements and electrolytes in health and disease* (1992), 6.4: 209-221
4. Jacobs D.R., Steffen L.M. "Nutrients, food, and dietary patterns as exposures in research: a framework for food synergy." *The American Journal of Clinical Nutrition*, (2003) Volume 78, Issue 3, 508-513
5. Position of the Academy of Nutrition and Dietetics: Vegetarian Diets, *Journal of the Academy of Nutrition and Dietetics*, (2016), Volume 116, Number 12
6. Position of the academy of nutrition and dietetics: dietary fatty acids for healthy adults, *Journal of the Academy of Nutrition and Dietetics*, (2014), 114 (1): 136-53
7. National Institutes of Health, Office of Dietary Supplements, *Zinc Fact Sheet for Health Professionals*, <https://ods.od.nih.gov/factsheets/Zinc-HealthProfessional/> Accessed August 2019
8. The National Academies Press; *Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D and Fluoride*, 1997, <https://www.nap.edu/catalog/5776/dietary-reference-intakes-for-calcium-phosphorus-magnesium-vitamin-d-and-fluoride>
9. Pizzorno Laura "Your Bones: How You Can Prevent Osteoporosis & Have Strong Bones For Life – Naturally" Edinburg, Praktikos Books, 2013
10. Pizzorno J. "Glutathione!" *Integr Med (Encinitas)* 2014 Feb; 13(1): 8-12
11. Lacatusu C., Grigorescu E., Floria M. Onofriescu A., Mihai B. "The Mediterranean Diet: From Environment-Driven Food Culture to an Emerging Medical Prescription" *Int J Environ Res Public health* 2019 Mar; 16(6): 942
12. Lonnerdal B "Dietary factors influencing zinc absorption." *J Nutr.* 2000 May; 130(5S Suppl): 1378S-83S
13. Saunders A.V., Craig W.J., Baines S.K. "Zinc and vegetarian diets" *MJA* 2012 June; Open 1 Suppl 2
14. National Institutes of Health, Office of Dietary Supplements, *Iodine Fact Sheet for Health Professionals* <https://ods.od.nih.gov/factsheets/Iodine-Consumer/> Accessed August 2019