

# Carlson®





## Norwegian

# COD LIVER OIL



*Simply the Best*

## Promotes and Supports:

-  Cardiovascular Health
-  Healthy Brain & Nerve Function
-  Healthy Vision
-  Healthy Immune Function

Throughout the world, medical scientists are encouraging people to eat more fish as fish oil is the only major source of the polyunsaturated omega-3's, EPA and DHA. Cod Liver Oil is a naturally-rich source of these important Omega-3's, which are unique in their structure & function and aid in our well being.

### DHA - Docosaehaenoic Acid (22:6 $\omega$ 3):

DHA supports normal growth and development, maintains brain and neural functions, and supports visual function. DHA is a vital component of tissue in the brain and retina of the eye and has a strong role in the function of the membranes of the Central Nervous System. Also, it is necessary for membrane fluidity and supports nerve cell communication.

### EPA - Eicosapentaenoic Acid (22:5 $\omega$ 3):

EPA promotes a healthy cardiovascular system by regulating the formation of healthy body prostaglandins. EPA plays a strong role in modulating inflammatory processes, including platelet aggregation. By competing with arachidonic acid in cell membranes, EPA has the ability to reduce the production of inflammatory eicosanoids such as prostaglandin E2 and leucotriene B4, and proinflammatory cytokines.

EPA and DHA from fish oils have been used in several studies that show their beneficial effects. Studies have shown that omega-3 oils, such as EPA and DHA are beneficial for promoting healthy heart rhythm, supporting improved endothelial function, promoting healthy triglyceride levels and supporting flexible joint function.

### ALA - Alpha Linolenic Acid (18:3 $\omega$ 3):

Cod Liver Oil naturally supplies Alpha Linolenic Acid (ALA), an Omega-3 that the body cannot synthesize. DHA and EPA can be synthesized from ALA albeit in limited amounts.

### Why Fish is Preferable to Flax (18:3 $\omega$ 3):

While flax and soybeans are a source of ALA, a study comparing flax and fish oils showed that subjects given flax oil over a 4-week period did NOT have increased blood levels of DHA. Converting ALA into DHA is very slow due to the body's limited availability of conversion enzymes, especially delta-6-desaturase. Yet, subjects who were given fish oil, did show high blood levels of DHA and EPA. Giving fish oils directly bypasses any need for extra enzyme conversion and subjects had the benefits available immediately.

### Vitamin A:

In addition to DHA, EPA and ALA, Carlson Cod Liver Oil contains the important vitamins A & D. Vitamin A has several important functions in the body, including the maintenance of proper vision. When the body is deficient in Vitamin A, the eye gradually loses its ability to adapt to changes in light resulting in "night blindness." Another vital role of Vitamin A concerns the formation, maintenance and growth of skin and mucous membranes, which form the body's primary barrier to infection.

### Vitamin D:

Vitamin D helps regulate and control the metabolism of Calcium and Phosphorus by aiding in the absorption of these two minerals from the small intestine, and by directly affecting the rate at which these minerals form and maintain bone.

The U.S. Recommended Dietary Allowance (RDA) for infants and children has long been 400 IU of Vitamin D. The scientific basis

for this dose was that it approximated what was in a teaspoonful of cod liver oil, found effective to prevent the Vitamin D deficiency disease called rickets. The current Dietary Reference Intakes by the Institute of Medicine range from 200 to 600 IU per day depending on age. The U.S. upper limit for Vitamin D is now 2,400 IU per day.

How much vitamin D is preferable? The need for vitamin D has been extensively studied by Reinhold Vieth and published in the prominent *American Journal of Clinical Nutrition (1999-2001)*. Vieth finds 400 IU daily of vitamin D is too low to maintain preferred blood levels of vitamin D. He states, "The beneficial amount is more likely to be 800-1,000 IU per day on the basis of bone density measurements and fracture prevention in the elderly." Vieth reports the toxicity level is greater than 40,000 IU daily.

## How is Carlson Cod Liver Oil Made?

Purity and freshness of raw materials are top priorities for Carlson. For this reason, only livers of cod caught in the northern oceans are used. Here, in the cleanest seas in the world, the cold ocean waters contain ideal nutrition for the growth of healthy cod. Only fish harvested from nets in fresh clean arctic waters far off the coast of Norway are used for Carlson Cod Liver Oil.

## Carlson Quality

During the fishing season, cod are gathered and brought to the fishery daily, where workers immediately remove the liver from the cod and the liver oil from the liver tissues. Most other types of cod liver oil are not processed daily because they come from cod caught by large boats which set out to sea for ten to fourteen days, which delays the processing. This is an important difference as freshness of the oil depends on how fast the oil is removed from the liver tissue. By removing the oil from the liver tissue each day, Carlson Cod Liver Oil is protected from degradation.

## Norwegian Innovation

The Norwegian concern for freshness is part of a tradition, which began over a century ago when an innovative pharmacist revolutionized the production of cod liver oil. This method effectively separates the oil from the liver tissues without the use of chemicals. The steam extraction process produced the first high quality cod liver oil, practically colorless and without the pungent smell and taste of earlier products.

This process is still used today in the production of Carlson Cod Liver Oil. The fishery collects the livers and places them into a funnel-shaped steam cone. In the pressurized chamber steam separates the oil from the cells of the cod liver. The oil is siphoned out of the cone as it forms and is put into containers, each capable of holding 2.5 tons of oil. Nitrogen is pumped into these containers to remove all of the oxygen. If left with the oil, oxygen could damage the valuable unsaturated fatty acids (DHA and EPA) of the cod liver oil.

The initial processing is called rendering, and its main function is to extract the oil from the liver and remove most of the protein content. The oil is cloudy at this stage due to saturated fats called stearins, which will be removed later. The cod liver oil is also rich in natural antioxidants, which protect the oil from oxidation.

Further purification and separation steps remove the remaining water and protein. These steps include molecular distillation when necessary. Then, by carefully cooling the oil, the stearins (solid fats) are solidified and separated from the oil through a mechanical filtering press.

In Norway, the clear Carlson Cod Liver Oil is then bottled and nitrogen-sealed, removing all air from both the oil and bottle. Many other types of cod liver oil are shipped to the United States in large drums and then bottled at a later date. Having the cod liver oil bottled in Norway insures freshness, eliminating any potential problems that could arise during storage or shipping.

## Regularly Tested for Purity and Potency

Carlson is committed to offering only the highest quality cod liver oil, which consistently provides the best results. Carlson Cod Liver Oil is regularly tested (using AOAC international protocols) for potency and purity by an independent, FDA registered laboratory and found to be free of detectable levels of mercury, cadmium, lead, PCB's and 28 other contaminants.



Available in great tasting regular and natural lemon flavors!



Each teaspoonful of Carlson® Cod Liver Oil provides approximately:

DHA (Docosahexaenoic Acid).....	500 - 550 mg
EPA (Eicosapentaenoic Acid).....	460 - 550 mg
ALA (Alpha-Linolenic Acid).....	46 - 50 mg
Vitamin A.....	1,000 - 1,250 IU
Vitamin D.....	400 - 500 IU
Vitamin E.....	1 IU
(Natural d-alpha tocopherol to preserve freshness)	

Code	Size	Code	Size
Regular Flavor		Lemon Flavor	
1321	(250 ml)	1351	(250 ml)
1322	(500 ml)	1352	(500 ml)

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This product is not intended to diagnose, treat, cure or prevent any disease.