

Zoooca Calanus® Wax Esters

Wax Esters vs Traditional Fatty Acids

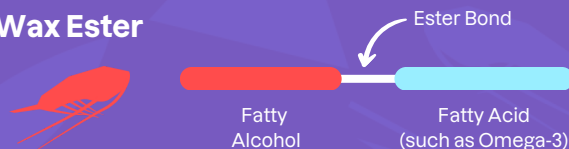
Wax esters are esterified fatty acids that are formed by combining one fatty acid with one fatty alcohol with an ester bond. This results in a highly hydrophobic and nonpolar molecule.

Traditional fatty acids consist of a glycerol backbone and multiple esterified fatty acids, taking up more space. Wax esters are a more compact energy storage molecule.

There are many different possible combinations of fatty acids and fatty alcohols; each combination will have a unique set of properties, steric orientation and phase transition. Some wax esters are saturated, and others are unsaturated.

Wax esters are distinctly different from other marine or plant oils in chemistry, their absorption, bioactivity, and health benefits.

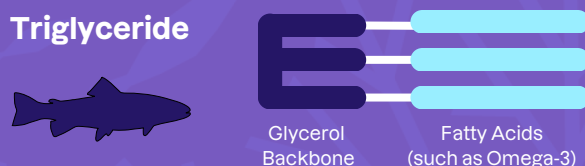
Wax Ester



Phospholipid



Triglyceride

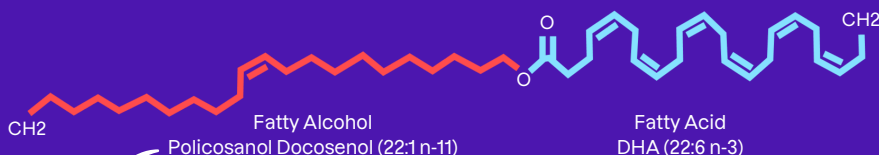


Long-chain Fatty Alcohols

Polar zooplankton, such as Calanus, are known for their storage of wax esters as a natural energy reserve during their one-year life cycle at various temperatures and depths in the ocean.

Calanus contains wax ester composed of long-chain polyunsaturated Omega-3s, such as SDA, EPA and DHA bound to the long-chain fatty alcohols / policosanols such as docosenol and eicosenol.

Omega-3 DHA as a Wax Ester



Policosanols are long carbon chains, structurally similar to fatty acids but with an alcohol end. Research on Policosanols has shown benefit in physical performance, body composition and inflammation regulation.



Both fatty acid and fatty alcohol carbon atoms in marine wax esters is generally between C14-C22.



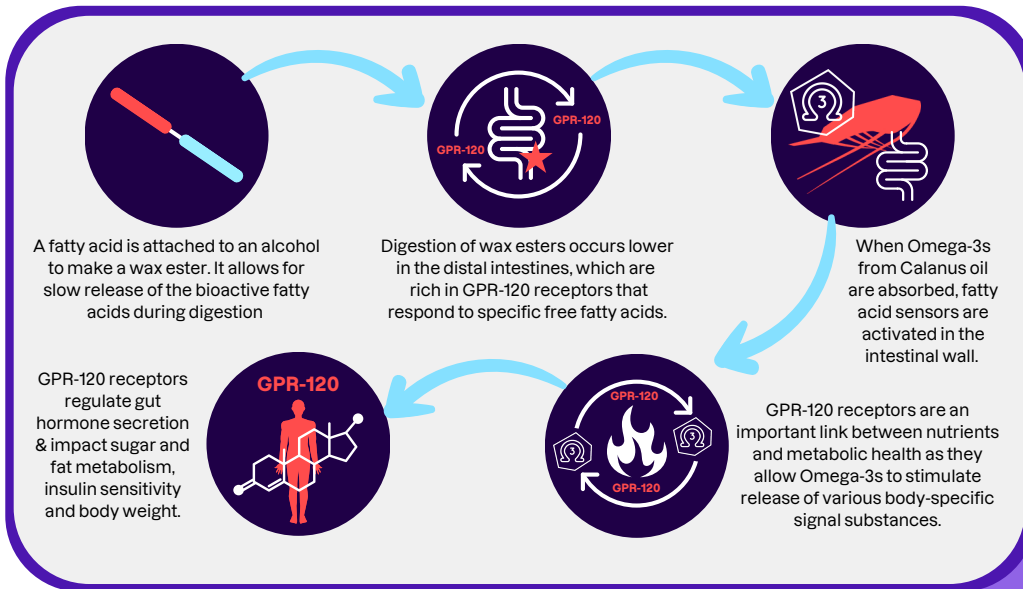
Zoooca Calanus oil is unique in that its lipids are in the chemical form of wax esters and may constitute as much as 80-90 % of the total fat.

Digestion & Absorption

Wax esters are digested more slowly, than other Omega-3 forms (ethyl esters and triglycerides) commonly found in most fish oils.

While other Omega-3s claim their benefit is from rapid absorption, Calanus oil is unique in that its slow digestion allows it to withstand the first line of digestive enzymes, letting the lipids reach the distal part of the GI tract without compromising the bioavailability of the fatty acids.

This allows activation of the GPR120 receptors, nutrient receptors present in the lower part of the GI system involved in regulating metabolic and inflammatory processes.



In Calanus® Oil, more than 85% of the lipids consist of wax esters, with about 11% of the fatty acids as monounsaturated fatty acids (MUFA), and approximately 19% of the fatty acids are PUFA of which 18% are Omega-3 fatty acids.

The main fatty alcohols present are the equivalents of the dominant LC-MUFA in the oil, namely the monounsaturated long-chain fatty alcohols eicosenol (20:1n-9) and docosenol (22:1n-11)

