

# Fish oil

- Flesh oil, liver oil, or oil of the whole fish
- By product in fish meal plant or may be the target product in fish oil production plant
- Versatile and finds many applications in the food and technical industries
- Of considerable economic importance to producers

# Chemical structure of fish oil

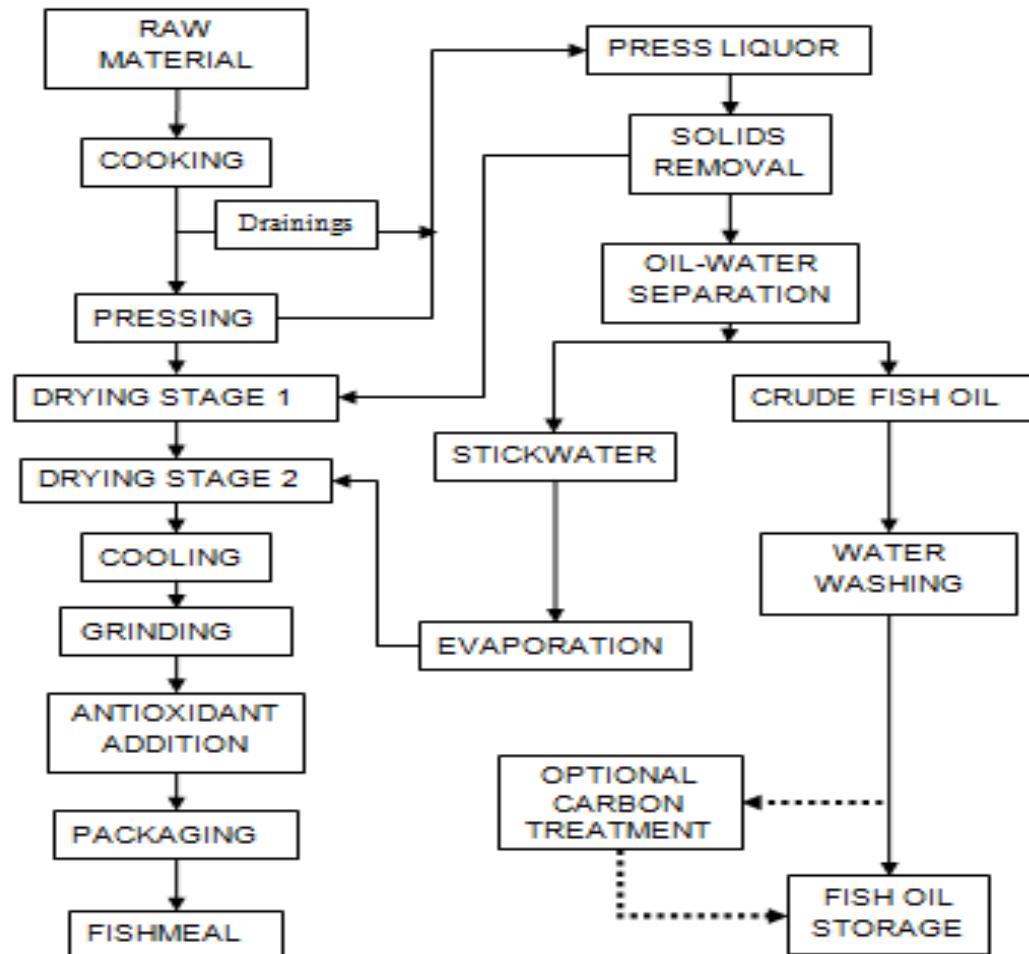
- Mainly consists of triglycerides of fatty acids with variable amounts of phospholipids, glycerol ethers and wax esters
- Contain a wide range of long-chain fatty acids with the number of carbon atoms ranging mainly from 14 to 22
- High degree of reactivity (unsaturation) ranging up to six double bonds per molecule

# Raw material

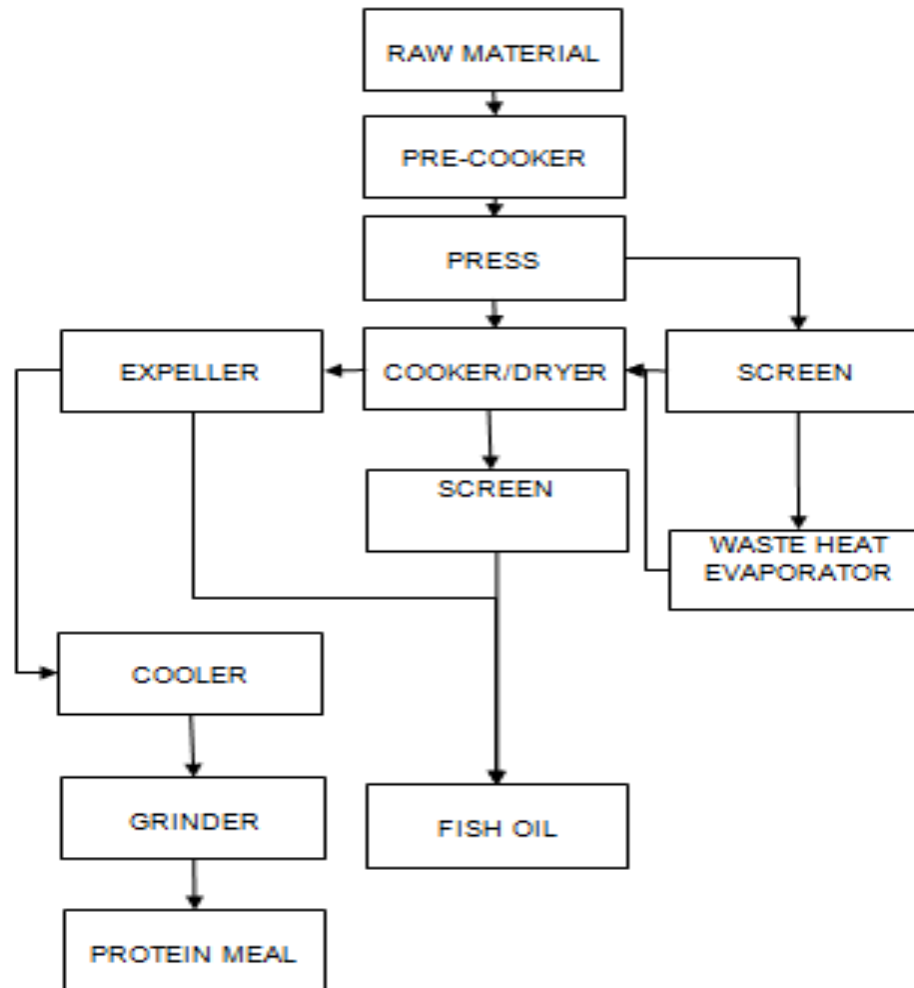
- Fish caught specifically for reduction to fishmeal and fish oil such as menhaden, anchovy, capelin and sardines.
- Incidental or by catch from another fishery (for example the global discards amounted to 27.0 million metric tons (mmt) with a range of from 17.9 to 39.5 mmt with shrimp by catch accounting for 11.3 mmt)
- Fish by-products from the edible fisheries such as cuttings from filleting operations, fish cannery waste, roe fishery waste and more recently surimi processing waste.

# Production of fish oil

- Wet reduction process to produce crude fish oil



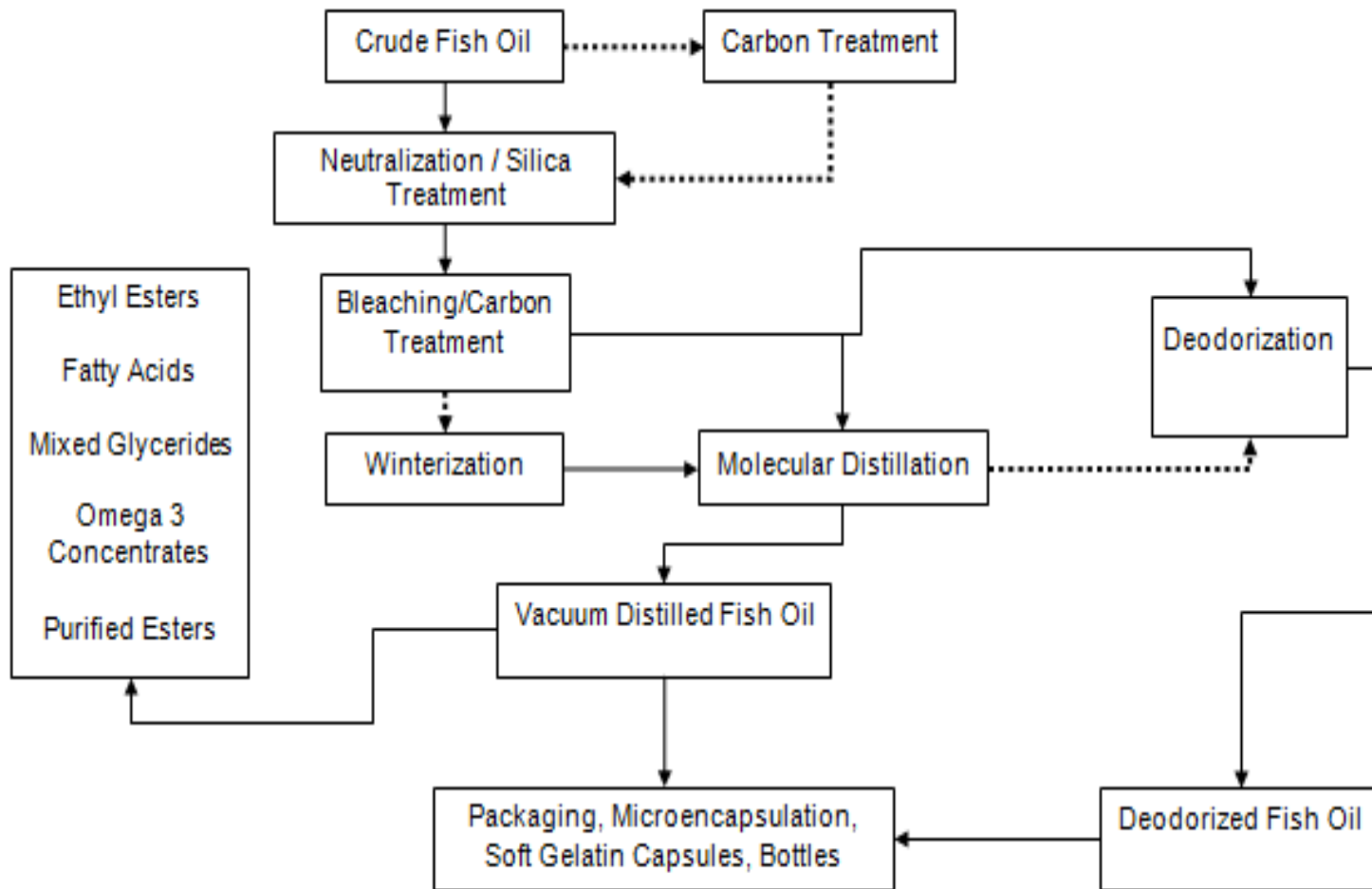
# Dry rendering process to produce crude fish oil



# Processing of fish oil

- Carbon Treatment
- Oil Storage
- Degumming
- Alkali Refining
- Water Washing / Silica Treatment
- Adsorptive Bleaching & Carbon Treatment
- Drying
- Winterization
- Deodorization
- Vacuum Stripping or Thin Film, Molecular or Short Path Distillation

# Production of edible and pharmaceutical grade fish oils and derivatives



# Importance of Unsaturated Fatty acids in structure

- Fish oil is rich in poly unsaturated fatty acids (PUFA)
- Refined fish oils are rich in polyunsaturated fatty acids of the linolenic acid family
- The highly unsaturated properties make the oils suitable for a number of technical applications, particularly as drying oils and varnishes
- Used in metallic soaps, lubricating greases and waterproofing agents
- Small quantities of fatty acids are used pharmaceutically and medicinally, and for scientific research purposes



# Health beneficial effects

- Fish oil helps with cholesterol by lowering levels of LDL while also increasing levels of HDL
- Heart problems, cholesterol, arthritis, and diabetes are some of the major conditions in which fish oil provides some form of benefit or improved health.
- Fish oil supplements seem to have an anti-arrhythmic effect on the heart as well as prevent cardiac arrest. In doing this, fish oil can help lower the mortality rate of those individuals having heart complications
- Fish oil can benefit the heart because the EPA and DHA that make up the supplement helps to prevent plaque deposits and blood clots inside arteries.
- Fish oil improves the ability of muscle cells to take up glucose in the presence of insulin. This proves to be beneficial to those with type II diabetes

Thank You!  
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