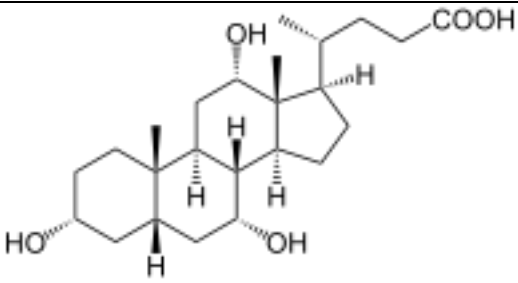
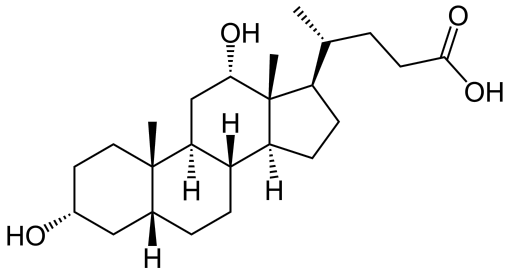


Lipids, Intestinal Bacterial, Cell Membranes, and a Cosmetic Treatment

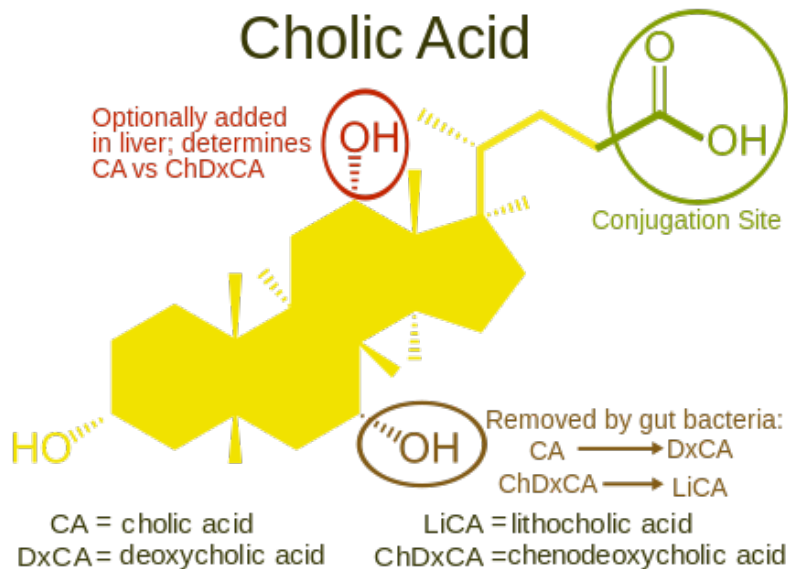
Cholic Acid	Deoxycholic acid
	

Bile Acids

Bile acids are steroid acids found predominantly in the bile. Bile acids are conjugated with taurine or glycine in the liver, forming soluble bile salts.

Primary bile acids are those synthesized by the liver. The two primary bile acids secreted by the liver are cholic acid and chenodeoxycholic acid.

Secondary bile acids are metabolic byproducts of intestinal bacteria. Deoxycholic acid is a secondary bile acid. **Bacteria metabolize cholic acid into deoxycholic acid** (conjugate base deoxycholate), and chenodeoxycholic acid into the secondary bile acid lithocholic acid. There are additional secondary bile acids, such as ursodeoxycholic acid. Deoxycholic acid is soluble in alcohol and acetic acid.



The main function of bile acids is to allow digestion of **dietary fats** and oils by acting as a surfactant that **emulsifies them** into micelles,[5]

Bile acids comprise about 80% of the organic compounds in bile (others are phospholipids and cholesterol).[4] An increased secretion of bile acids produces an increase in bile flow.

Medical Uses

Deoxycholic acid has been used since its discovery in various fields of human medicine. In the human body **deoxycholic acid is used in the emulsification of fats into micelles for the absorption in the intestine** allowing them to be colloidally suspended in the chyme before further processing. They also have hormonal actions throughout the body.

Deoxycholic acid has, in some countries (including Switzerland) been licensed as an emulsifier in food industry, although it is no longer common. Outside the body it is used in experimental basis of cholagogues and is also in use to prevent and dissolve gallstones.[4][5]

In research deoxycholic acid is used as a mild detergent for the isolation of membrane associated proteins. The critical micelle concentration for deoxycholic acid is approximately 2.4-4 mM.[6]

Sodium deoxycholate, the sodium salt of deoxycholic acid, is often used as **a biological detergent to lyse cells and solubilize cellular and membrane components**.

Sodium deoxycholate mixed with phosphatidylcholine, is used in mesotherapy injections to produce lipolysis, and has been used as an alternative to surgical excision in the treatment of lipomas.

It is now being used in cosmetic application as an alternative to liposuction. Kythera Biopharmaceuticals recently received FDA approval for the medical use of KYBELLA®, which is a deoxycholic acid injection formulation. This is the first FDA approved non-surgical injection for improvement in the appearance of moderate to severe submental fullness, commonly referred to as **double-chin**, in adults. KYBELLA is administered by a trained physician who injects the product under a patient's chin to destroy fat cells, improving the appearance of the patient's chin area.