

<http://www.wisegeek.com/what-is-a-sterol.htm>

What Is a Sterol?

A sterol is a particular type of lipid that consists of four fused carbon rings with one oxygen molecule at the end. The prototypical sterol is cholesterol, which has been highly studied for its health effects. Steroids, such as the hormones estrogen and testosterone, are also considered to be sterols. Ergosterol is a fungal sterol whose synthesis serves as a target for antifungal drugs, while phytosterols are plant compounds that are sterols. Hopanoids are bacterial compounds that share some similarities with sterols.

Lipids are fatty compounds that cannot be dissolved in water. Steroids are a special type of lipid that have a group of four carbon rings that are fused together. Unlike most lipids, they do not have a fatty acid tail. A sterol is a subgroup of steroids that has an oxygen at the end of the molecule.

Cholesterol is a sterol that is very important for normal cellular functioning. It is a vital component of animal cellular membranes and is necessary for their stability and fluidity. Also, it is the precursor molecule for many other compounds, including steroid hormones like estrogen, testosterone, and cortisol. Vitamin D is made from cholesterol, and the activated form of Vitamin D is a sterol.

While cholesterol can be obtained from the diet, most of the body's cholesterol is synthesized by the liver from saturated fats that have been consumed. Some forms of cholesterol can travel in the bloodstream. The varying forms of these substances have radically different effects on human health.

Low-density lipoproteins (LDL) is referred to as bad cholesterol. This name is due to the fact that it can line the walls of arteries, and increase susceptibility to heart attack and stroke. In contrast, high-density lipoproteins (HDL) bind to extra cholesterol in the blood and transfer it to the liver, where it is removed from the system. For these reasons, the ratio of these two types of cholesterol is more important than the amount of total cholesterol.

Ergosterol serves a function analogous to cholesterol, but in fungal cell membranes. Since it is not present in humans, the enzyme that synthesizes it makes attractive targets for antifungal medications. Several classes of drugs are used clinically as ergosterol biosynthetic inhibitors to treat fungal infections in humans, and as fungicides on plants. Some of these compounds are also used to treat protozoan infections, such as West African sleeping sickness.

Phytosterol is a type of sterol found in plants and primarily obtained in the diet from vegetable oils. There is evidence that it can prevent cholesterol from being absorbed in the intestines. There is some concern, however, that it may also interfere with the absorption of important nutrients. Examples of phytosterols are campesterol and sitosterol.

Hopanoids are compounds found in bacterial membranes. They are not sterols, but have fused-ring structures that share partial similarity with these compounds. Hopanoids serve a function in bacterial membranes similar to that of cholesterol in animal membranes.