18.10: Waxes

From the 1700s up to the late 1900s, whalers searched the ocean for the sperm whale. Whaling was a dangerous occupation—the prey averaged about fifty feet in length. But when successful, the search was worth it. One large whale could produce up to 500 gallons of oil, valuable for making candles, ointments, cosmetic creams, and industrial lubricants. In 1988, sperm whales (and other whale species) were placed under international protection because their numbers were diminishing rapidly. Today, various vegetable oils are used in place of whale oils.

Waxes

Another category of lipid molecule is waxes. **Waxes** are esters of long-chain fatty acids and long-chain alcohols. Waxes are soft solids with generally low melting points and are insoluble in water. The figure below shows the structure of cetyl palmitate, a natural wax present in sperm whales.

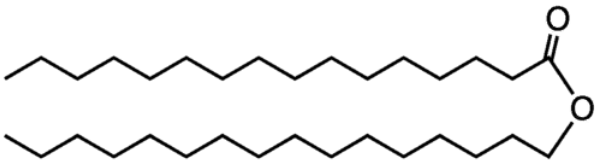

Figure 18.10.1: Cetyl palmitate belongs to the category of compounds called waxes. It is derived from a fatty acid that is 15 carbons in length and an alcohol that contains 16 carbon atoms.

One of the best known natural waxes is beeswax, though many other animals and plants synthesize waxes naturally. Waxes can be found on leaves of plants and on the skin, hair, or feathers of animals, where they function to keep these structures pliable and waterproof. Humans take advantage of the protective properties of natural and synthetic waxes in such applications as floor polish and car wax. Other common waxes include jojoba, carnauba, and wool wax, which is also known as lanolin.

Summary

- Waxes are esters of long-chain fatty acids and long-chain alcohols.
- Humans take advantage of the protective properties of natural and synthetic waxes in such applications as floor polish and car wax.