

Structure of Fatty Acid

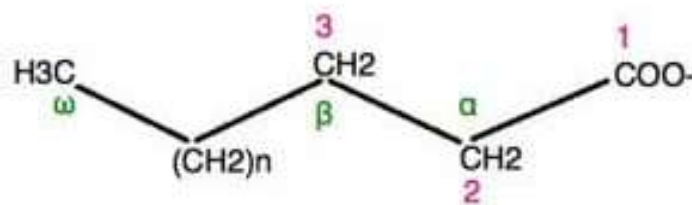
Fatty acids are composed of carbon chains containing a methyl group at one end and a carboxyl group at the other.

The methyl group is termed the omega (ω) and the carbon atom situated next to the carboxyl group is termed the “ α ” carbon, followed by the “ β ” carbon, etc.

Fatty acid molecules also have two chemically distinct regions:

- 1) a long hydrophobic hydrocarbon chain, which is not highly reactive; and
- 2) a carboxyl (-COOH) group, which is hydrophilic and highly reactive.

In the cell membrane, virtually all fatty acids form covalent bonds with other molecules via the carboxylic acid groups.



Fatty Acid

- As described above, fatty acids can contain double bonds (unsaturated fatty acids) or no double bonds (saturated fatty acids) in the hydrocarbon chains.
- The presence of double bonds results in the formation of bends in the molecules, and impacts the capacity of the fatty acid chains to stack together.
- Other differences between fatty acids include the length of the hydrocarbon chains, as well as the number and position of the double bonds.
- The presence of the double bond will also influence the melting point,
- as unsaturated fatty acids have a lower melting point than saturated fatty acids.
- The melting point is also influenced by whether there is an even or odd number of carbon atoms; an odd number of carbons is associated with a higher melting point.
- Furthermore, saturated fatty acids are highly stable, while unsaturated fatty acids are more susceptible to oxidation.