

Chem Olympiad Today · Library by
3/14 2:20pm

TSEF meeting Today @ Dne Lunch

Lipids:

Types: Simple

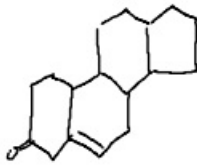
1. Fatty Acids (F.A.) - long unbranching chains, monocarboxylic (C.)
2. Waxes - esters of F.A. and long chain alcohols.

Complex

1. Phospholipids - phosphate replaces the F.A.
 - a. phospholipid bi-layer cell membrane
 - b. emulsifying agents - form micelles
lecithin - from egg yolks.
2. glyceophospholipids
3. Sphingolipids - not derived from fat - include an amino group
found in nervous tissue.
4. glycolipids
5. lipoproteins - LDL, VLDL, HDL

Steroids: all contain the same nucleus

these include cholesterol, reproductive hormones
& cortisone

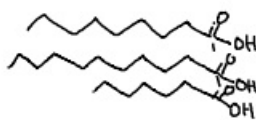


Prostaglandins, thromboxanes + leukotrienes

- muscle stimulation
- blood clotting
- anti-inflammatory responses
- hormone regulation

Fatty Acids (F.A.)


Saturated F.A. - all single C-C bonds, containing the max # of hydrogen



Due to the uniform zig-zag pattern of the saturated F.A. they can stack together which enhances the Vander Waals forces between them. This allows them to generally be solid at room temp. (23-25°C) ^{animal}

Unsaturated F.A. - contain at least one double bond



Due to the cis-formation  the unsat. F.A. cannot stack.

Generally liquid at room temp (23-25°C) ^{plant}

Essential Fatty Acids - the body cannot make them, so they must be taken in thru diet.

Linolenic and Linoleic acids

Eicosanoids - F.A. that are 20 carbon in length + all unsaturated

F.A. table → textbook pg 206 table 10.3

14	$\text{CH}_3(\text{CH}_2)_{12}\text{COOH}$	Myristic acid	Oil of nutmeg
16. <u>Lipid Functions:</u>	$\text{CH}_3(\text{CH}_2)_{14}\text{COOH}$	Palmitic acid	Palm oil
17. 1. Regulation - hormones, steroids + vitamins	$\text{CH}_3(\text{CH}_2)_{16}\text{COOH}$	Stearic acid	Beef tallow
18.	$\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{COOH}$	Oleic acid	Olive oil

2. Energy Storage

3. Cell membrane structure

- barrier
- gate

4. Nutrient Storage

5. Protection

Lipid Properties

1. non-polar

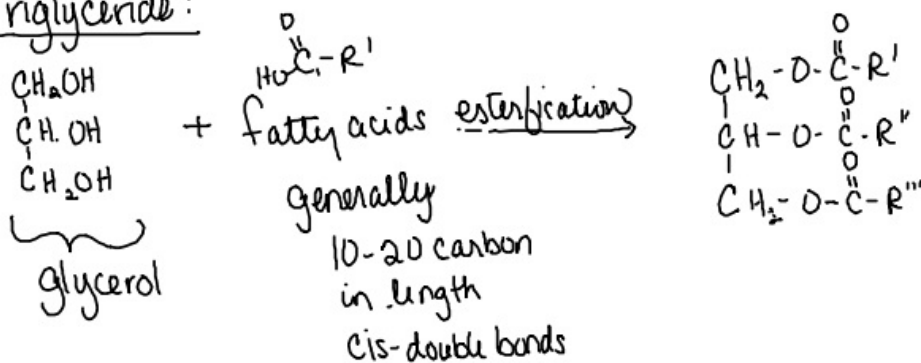
2. high energy density

3. degree of saturation determines the physical state

4. not soluble in H_2O , require non-polar solvents.

5. Colorless, odorless, tasteless.

Triglyceride:



Form a triglyceride composed of myristic acid, palmitic acid + oleic acid