

Functions of Lipids

1. Fats hold more energy than _____.
2. Gives structure to _____.
3. Important for fat-soluble vitamins = _____.
4. Provides _____ (keeps animals warm).
5. Provides _____ (internal fat keeps organs safe).

Structures

- Unsaturated fatty acid = has a _____ bond.
- Glycerol backbone + 3 fatty acids = _____ bond = fat (_____)
- Ester bond is a source of creating _____ water.
- Common fatty acids: _____ and _____.

Nomenclature

- First value after C = number of _____
- Second value = number of _____ bonds
- Unsaturated fats have at least _____ double bond.
- Saturated fats have _____ double bonds.
- Essential fatty acids = _____, _____, and _____.
 - (Arachidonic acid is _____ if linoleic acid is limiting)

Symptoms of Deficiency

- _____ skin
- Loss of _____

- Poor _____ and _____
- _____ failure
- _____

Classifications of Lipids

- _____ = Esters of fatty acids with various alcohols
 - Triglycerides:

Esters with glycerol =

Esters with other alcohols =
- Compound lipids = _____ - cell membrane components, _____
- _____ = Cholesterol and fat soluble vitamins

Properties of Fats and Lipids

- Melting point = change from _____ to _____
 - Short Chains _____ than long chains
 - Unsaturated _____ than saturated
- Iodine value: Gives degree of _____
 - High iodine value → _____ fat
 - Low iodine value → _____ fat
- What are the 4 Fat depots + Prioritization ?

1) _____ - _____

2) _____ - _____

3) _____ - _____

4) _____ - _____

- Cattle deposit mainly _____ fat
- Swine and poultry deposit what they _____
- Marbling occurs in _____ fat

Non-Ruminant Digestion

- Triglycerides consumed and leave _____
- Broken down by: _____, _____, and _____
- Products: _____ (FFA), _____, and _____
- Fat must form _____ to enter mucosal membrane for absorption
- Absorbed fats are reformed into _____
- Chylomicrons coat fats with _____
 - Increases absorption and availability
 - Leaves enterocyte → enters _____ system

Ruminant Digestion

- Rumen microbes produce _____ and _____ from triglycerides
- VFAs: _____, _____, _____ (from carbons of glycerol backbone)
- FFA hydrogenated by microbes → deposited as _____ fatty acids
- Ruminants absorb fat from _____

Lipid Transport & Uptake

- Chylomicrons carried through body by _____
- Enzyme _____ breaks down chylomicrons → fat enters cells
- Process is stimulated by _____
- Lipo = _____

Breakdown of Fats for Energy

1. Hormone-sensitive lipase mobilizes triglycerides and fatty acids from _____ tissue
2. Fatty acids enter _____ (requires carnitine, a conditional vitamin)
3. Stepwise removal of 2 carbons at a time forms _____
4. Acetyl CoA enters _____ cycle → produces _____
5. This process is called _____