LIPID METABOLISM

2nd stage Lec 2 Dr. Rusul H. Hamza



Overview of β-Oxidation

Fatty acids are broken down 2-carbon units at a time.

+ Pieces are released as **acetyl-CoA**.





Oxidation

Hydration

Oxidation

+Cleavage





+ serve as important **metabolic fuels** for many peripheral tissues, particularly heart and skeletal muscle





Ketone Bodies

Ketogenesis Formation of ketone bodies

from *acetyl-CoA* ketone bodies Made in the mitochondrial matrix of liver



Cholesterol metabolism



De Novo Synthesis of Cholesterol

occurs in most cells of the body.

Liver and intestine are major sites of cholesterol synthesis.

derived from the acetyl-CoA.

The reactions of cholesterol biosynthesis occurs into **5 stages**.





Lipoproteins

- Lipids are packaged in the bloodstream into Lipoproteins
- Lipoproteins have different combinations of lipids and apoproteins



Major Lipoproteins and their function

- 1. <u>Chylomicrons:</u> Chylomicrons transport triglycerides from intestine
- 2. Very Low Density Lipoproteins (VLDL)
- 3. Intermediate Density Lipoproteins (IDL) :

Carry cholesterol and triglycerides

4. Low Density Lipoproteins (LDL): carry cholesterol

5. <u>High Density Lipoproteins(HDL)</u>:

HDL is "good" cholesterol.

It removes cholesterol and protects against heart disease

Atherosclerosis

High level of serum cholesterol results in atherosclerosis.

The atherosclerosis is characterized by hardening and narrowing of the arteries due to deposition of cholesterol and other lipids in the inner arterial wall.

Factors responsible for development of atherosclerosis:

Age, Sex, Genetic factor, and Hyperlipidemia