READING GUIDE

PART 1: METABOLISM OF DIETARY LIPIDS

Objectives

1. Describe how triacylglycerols and cholesteryl esters are synthesized in enterocytes
2. Describe how dietary lipids are utilized by tissues
3. Describe how dietary lipids are processed and absorbed

Metabolism of Dietary Lipids is covered in Chapter 15.

Be able to recognize the following: fatty acid, triacylglycerol, phospholipid, steroid, glycolipid (Fig. 15.1)

PROCESSING OF DIETARY LIPID IN THE STOMACH

How does the processing of dietary lipid take place in the stomach? What are the important enzymes for this process, and where does their action take place? (Fig. 15.2)

Patients with cystic fibrosis have a defective gene that affects pancreatic enzymes. Why does this occur?

EMULSIFICATION OF DIETARY LIPID

What is the process of emulsification? Where does it take place?

What are bile salts? Why are they important? (Fig. 15.3)

DEGRADATION OF DIETARY LIPIDS

How is TAG degraded? Where are they degraded? What enzymes are important for this degradation? What is the mechanism? What happens if you inhibit these enzymes?

How are cholesteryl esters degraded? What is the product of this degradation?

How are phospholipids degraded?

What are the hormones that control lipid digestion? Where do they originate from and how do they work? (Fig. 15.4)

ABSORPTION OF LIPIDS

What is meant by the term "mixed micelle"? Why are mixed micelles important? (Fig. 15.5)

Where does the absorption of lipids occur? How does this happen? (Fig. 15.6)

What is a chylomicron?

Where are TAGs and cholesteryl esters resynthesized? How does this occur? Where does it occur?

LIPID MALABSORPTION

What does the term "steatorrhea" mean? Why does it occur? (Fig. 15.7)

SECRETION OF LIPIDS

How are lipids secreted from enterocytes? What is apolipoprotein B-48?

DIETARY LIPID UTILIZATION

Where are TAGs utilized? What is the fate of the free fatty acids and glycerol from the breakdown of TAGs?

What are Type I and Type III hyperlipoproteinemia?