Topic 15. Digestion of lipids. Catabolism of triacylglycerols, its regulation. Oxidation of fatty acids and glycerol.

Theoretical questions:

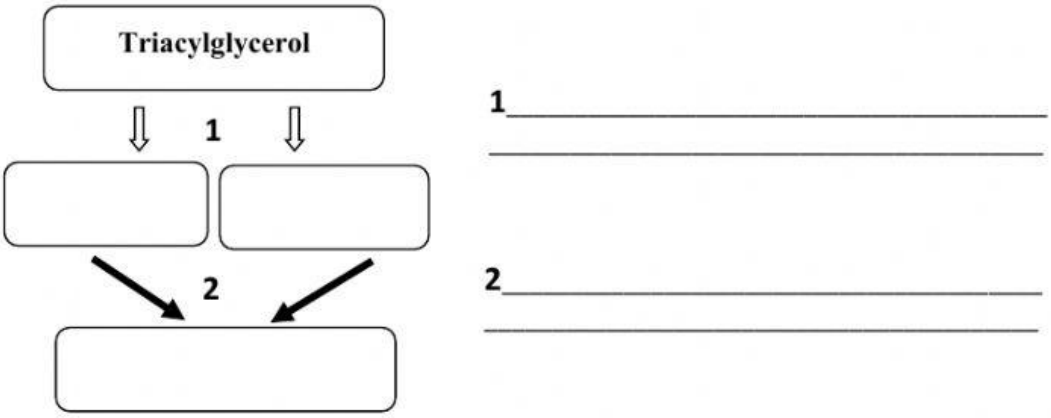
1. Catabolism of Triacylglycerols in Digestive Tract: reactions.
2. Catabolism of Triacylglycerols in Adipose Tissue: reactions, regulation of TAG Lipase activity.
3. Glycerol catabolism. Energy balance of aerobic oxidation of Glycerol in muscle tissue.
4. Fatty Acids Oxidation:
   4.1. Fatty Acids activation.
   4.2. Transfer of Fatty Acids across the inner mitochondrial membrane, regulation of the process.
   4.3. Reactions and enzymes of β-oxidation.
   4.4. Energy balance of aerobic oxidation of Fatty Acids.

Study Questions and Tasks

1. Catabolism of Triacylglycerols:

1.1. Scheme in Digestive Tract:

Metabolites Enzymes and reactions



1.2. Reactions in Digestive Tract:

1.

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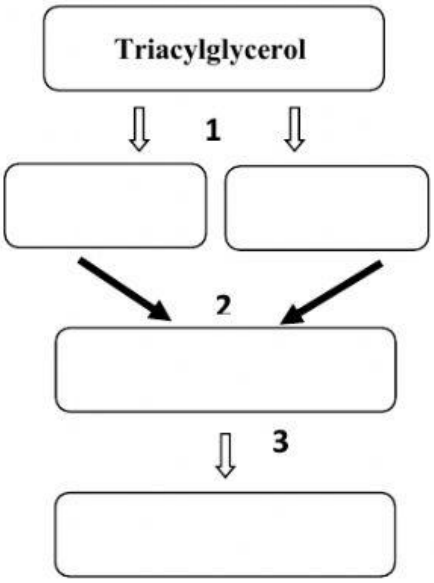
2.

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1.3. Scheme in Adipose Tissue:

Metabolites

Enzymes and reactions



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1.4. Reactions in Adipose Tissue:

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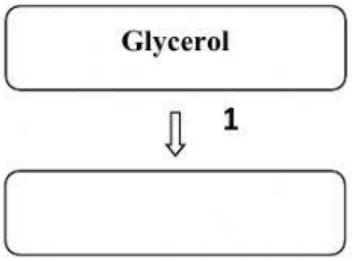
1.5. Write down the regulatory enzymes of TAG Lipase activity



2. **Glycerol catabolism.**

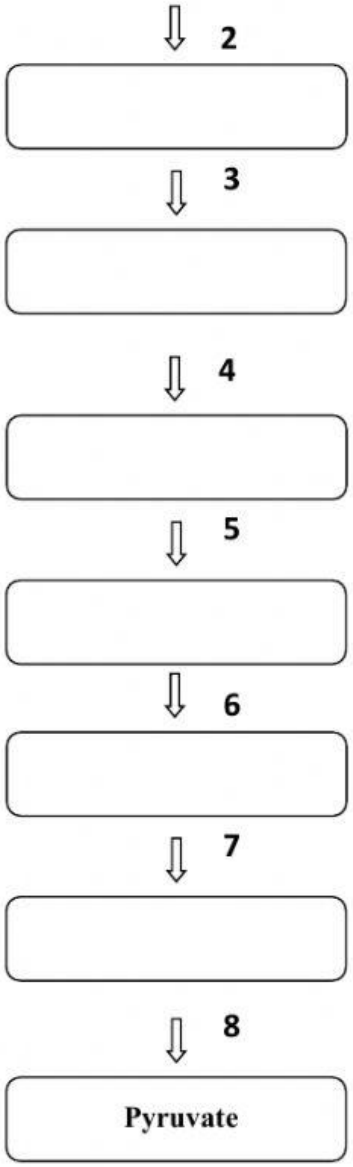
2.1. Scheme of glycerol oxidation till pyruvate

Metabolites Enzymes and reactions



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2.2. Write down the reactions of glycerol catabolism till GAP

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2.3. Energy balance of aerobic oxidation of Glycerol in muscle tissue.

	Glycerol till GAP	GAP till pyruvate	Krebs cycle + ETC
Number of ATP from			
Total number of ATP			

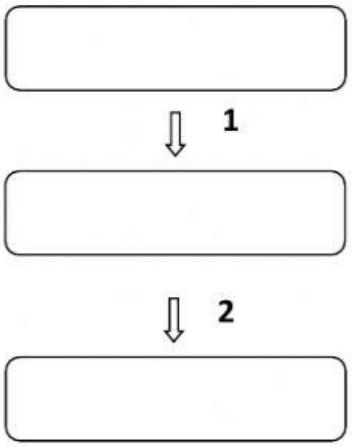
3. **Fatty Acids Oxidation:**

3.1. Transfer of Fatty Acids across the inner mitochondrial membrane. Draw a scheme.

3.2. Scheme of β-oxidation:

Metabolites

Enzymes and reactions



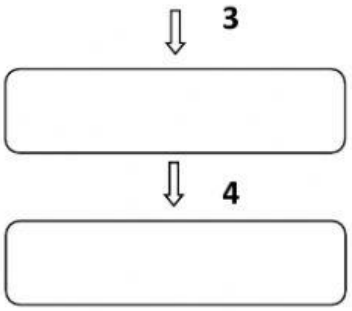
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3.3. Reactions and enzymes of β-oxidation:

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3.4.Energy balance of aerobic oxidation of palmitate

	Number of Acetyl-CoA	Number of $NADH^{+}+H^{+}$	Number of $FADH_2$
Number of ATP from			
Total number of ATP			

Text-books:

1. Biochemistry 5th Edition Ch.16, pp.189-195.
2. Prasad textbook of biochemistry OCR. Topic 11, pp. 212-217.

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