

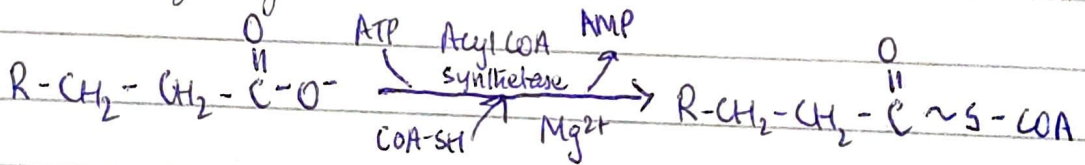
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 CC-7

Oxidation of fatty acids: β oxidation

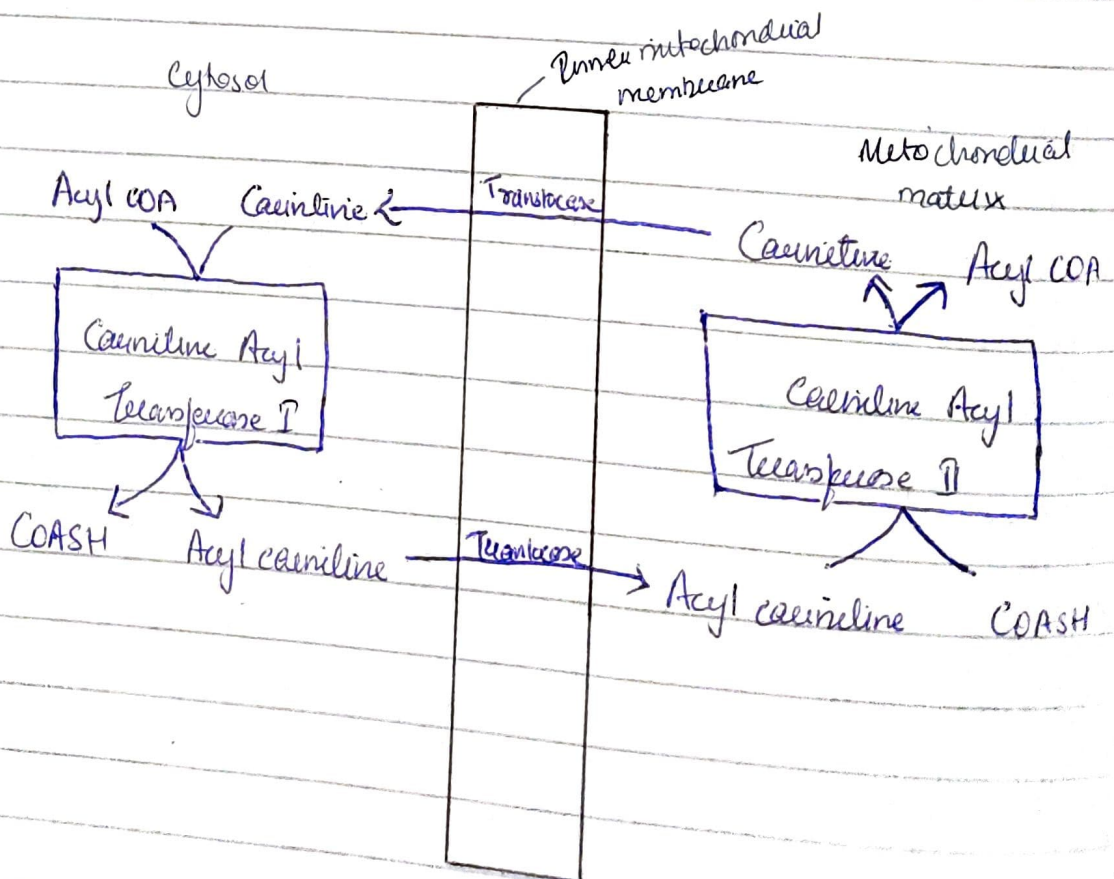
Most of the fatty acids we consume are even carbon fatty acids.

Oxidation of fatty acids at β carbon with sequential removal of two carbon units at a time beginning from carboxylic end. It occurs in mitochondria. It occurs in three stages: (1) Activation (2) Transport into mitochondria (3) β -oxidation proper.

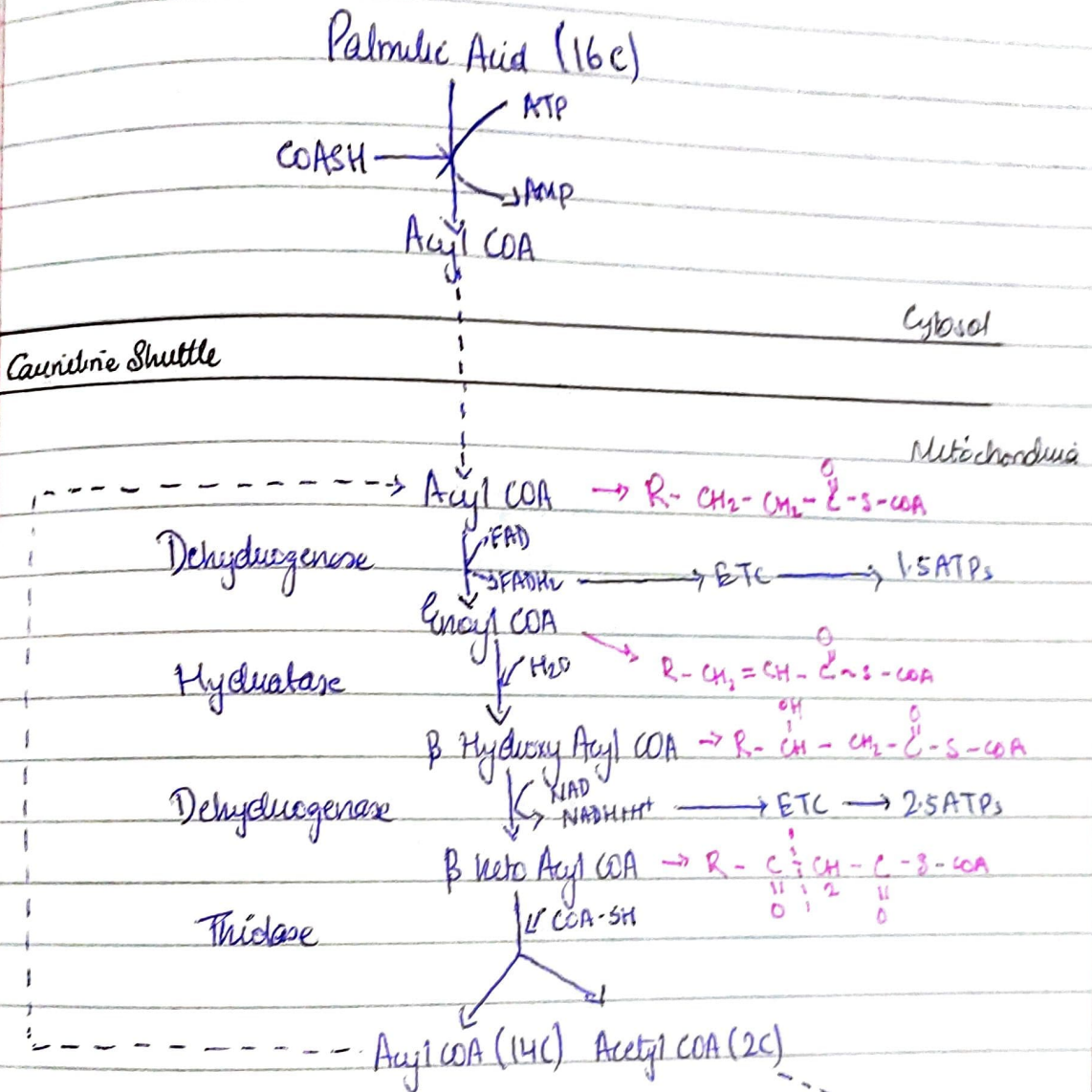
1. Activation of Fatty Acids



2. Transport into mitochondria : Carnitine shuttle



3. β -oxidation process



For Palmitic Acid, it occurs for a total 7 times, and a total of 8 molecules of Acetyl CoA are produced.

Energy $\rightarrow 8 \text{ Acetyl CoA} = 8 \times 10 \text{ ATP} \Rightarrow 80$

1 cycle $-(1.5 + 2.5) \text{ ATP} = 4 \text{ ATP}$

7 cycle $= 28 \text{ ATP}$

Total ATPs $= 108 \text{ ATPs} - 2 \text{ ATPs (Activation of FA)}$

$= 106 \text{ ATPs}$

This is an approximation as only 1 ATP is used but two high energy bonds are broken. $\text{ATP} \rightarrow \text{AMP}$.