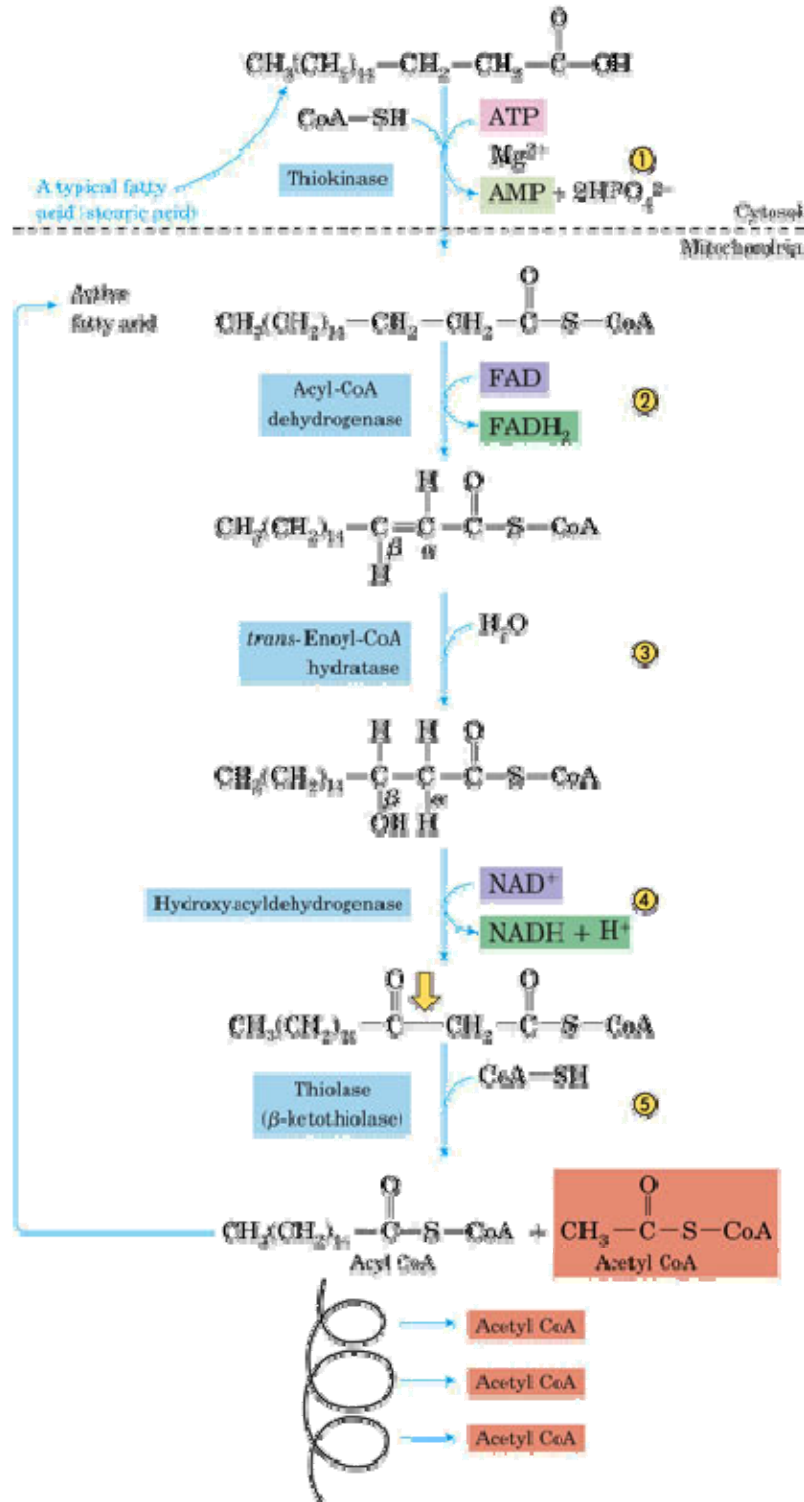


Chapter 25 – Lipid Metabolism

Chem 306

I. Catabolism of Fatty Acids

A. Beta oxidation of fatty acids



$$\begin{array}{c}
 \text{CH}_2\text{OH} \\
 | \\
 \text{CHOH} \\
 | \\
 \text{CH}_2\text{OH} \\
 \text{Glycerol}
 \end{array}
 \xrightarrow[\text{ADP}]{\text{ATP}}
 \begin{array}{c}
 \text{CH}_2\text{O}-\text{P} \\
 | \\
 \text{CHOH} \\
 | \\
 \text{CH}_2\text{OH} \\
 \text{Glycerol 1-phosphate}
 \end{array}
 \xrightarrow[\text{NADH} + \text{H}^+]{\text{NAD}^+}
 \begin{array}{c}
 \text{CH}_2\text{O}-\text{P} \\
 | \\
 \text{C}=\text{O} \\
 | \\
 \text{CH}_2\text{OH} \\
 \text{Dihydroxyacetone phosphate}
 \end{array}$$

$$\begin{array}{c}
 \text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{SCoA} \xrightarrow{\text{H}_2\text{O}} \text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}^- + \text{CoASH} + \text{H}^+ \\
 \text{Acetoacetyl CoA} \qquad \qquad \qquad \text{Acetoacetate} \\
 \swarrow \quad \searrow \quad \swarrow \quad \searrow \\
 \text{CH}_3-\overset{\text{H}}{\underset{\text{OH}}{\text{C}}}-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}^- \quad \text{NADH} + \text{H}^+ \quad \text{NAD}^+ \quad \text{H}^+ \quad \text{CO}_2 \quad \text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3 \\
 \beta\text{-Hydroxybutyrate} \qquad \qquad \qquad \text{Acetone}
 \end{array}$$

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