The acid-catalyzed reaction of an enolizable aldehyde or an enolizable ketone with an iminium ion, usually generated \textit{in situ} by the reaction of formaldehyde with a secondary amine, followed by a base to give a β-aminoaldehyde of a β-aminoketone, respectively, is known as the Mannich reaction. The product of the Mannich reaction is called the Mannich base.

\textbf{eg:}

\begin{center}
\begin{tikzpicture}
\node at (0,0) [draw,shape=circle,minimum size=2cm] (cyclohexanone) {\text{Cyclic hexanone}};
\node at (3,0) [draw,shape=circle,minimum size=2cm] (product) {\text{Product}};
\draw[->] (cyclohexanone) -- node[fill=white,inner sep=2pt,align=center]{1. $\text{Et}_2\text{NH}, \text{HCHO}$\text{\small catalyst: aq. HCl}} (product);
\draw[->] (cyclohexanone) -- node[fill=white,inner sep=2pt,align=center]{2. aq. NaOH} (product);
\end{tikzpicture}
\end{center}

\textbf{mechanism:}

\begin{center}
\begin{tikzpicture}
\node at (0,0) [draw,shape=circle,minimum size=2cm] (catalyst) {\text{Catalyst}};
\node at (3,0) [draw,shape=circle,minimum size=2cm] (product) {\text{Product}};
\draw[->] (catalyst) -- node[fill=white,inner sep=2pt,align=center]{\text{Et}_2\text{NH, HCHO}} (product);
\draw[->] (catalyst) -- node[fill=white,inner sep=2pt,align=center]{aq. HCl} (product);
\draw[->] (catalyst) -- node[fill=white,inner sep=2pt,align=center]{aq. NaOH} (product);
\end{tikzpicture}
\end{center}

\textbf{Contributors}

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