Chem 345 – Organic Reactions Chapter 22

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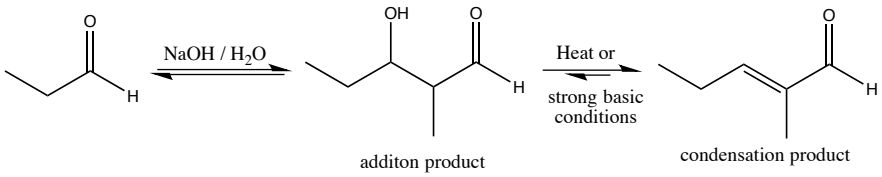
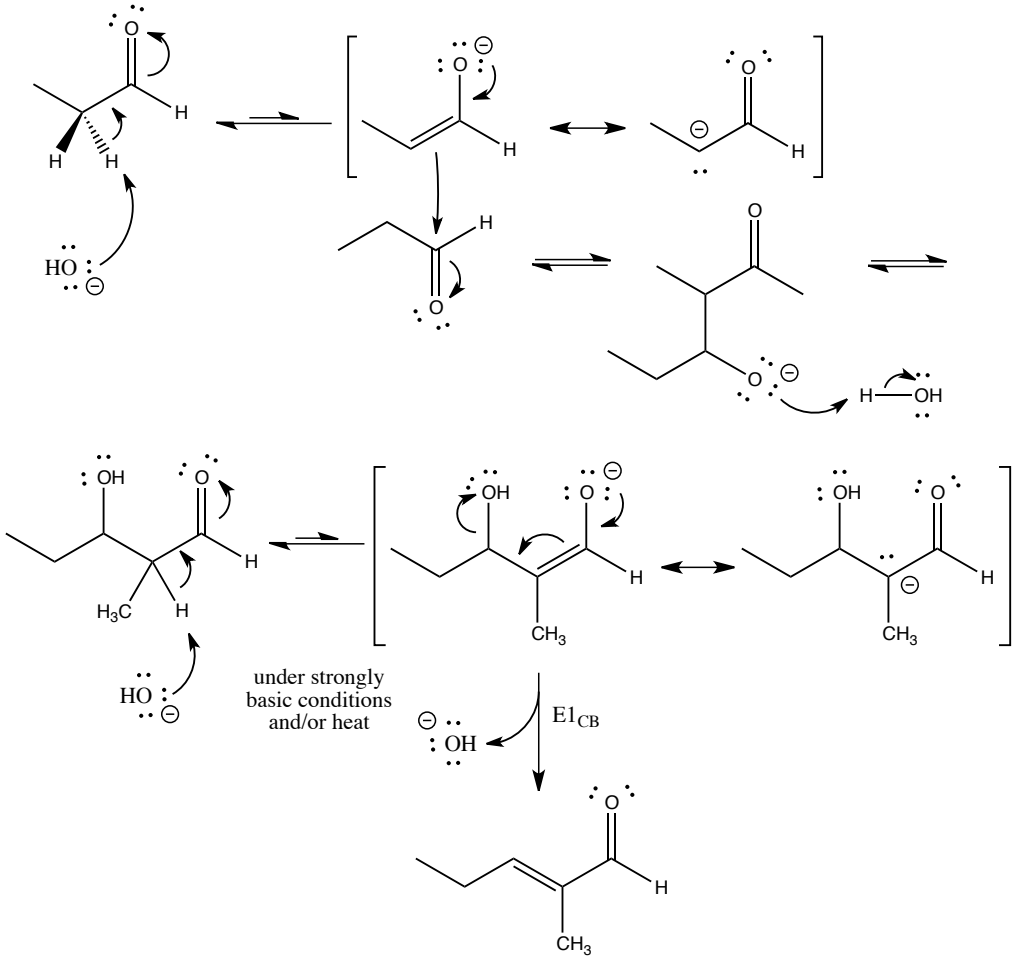
http: www.chem.wisc.edu/areas/clc (Resource page)

The Aldol Reaction Under Basic Conditions

Reaction:



Mechanism:



The aldol reaction under basic conditions involves the formation of an enolate that eventually reacts with another aldehyde or ketone in the mixture; aldehydes being more reactive. The initial product of the reaction is an addition, that is, two molecules come together. Under strong basic condition and/or the use of heat the addition product further reacts to dehydrate. This rate determining step,

an $E1_{CB}$ mechanism - to form the α,β-unsaturated carbonyl compound involves the release of an –OH group. Not synthetically useful and can produce a mixture of products when different aldehydes and/or ketones are present in the mixture. A better example of a synthetic method is the ***Claisen-Schmidt Condensation***. This condensation reaction has two reagents; one is a ketone with α-hydrogen atoms and the other is an aldehyde with no α-hydrogen atoms. As you can see the product is an α,β-unsaturated carbonyl compound.