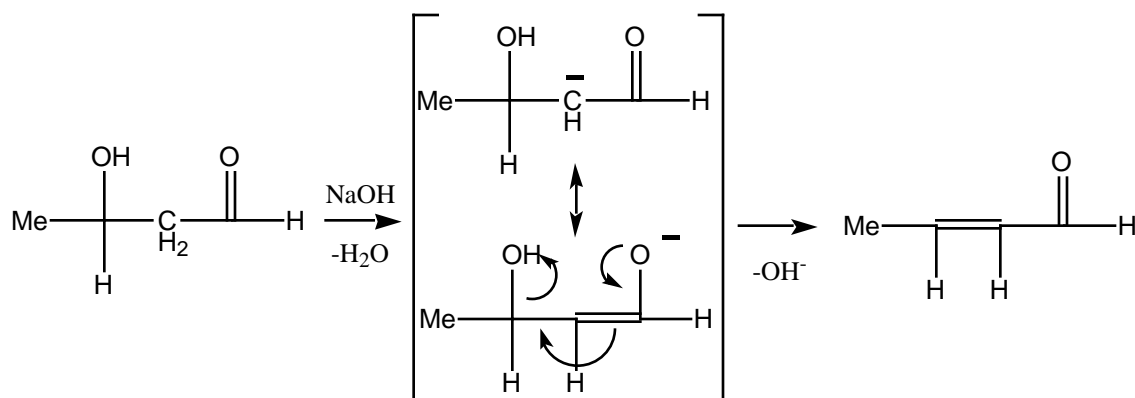


Aldol Condensation. About the “Ooops” During Today’s Lecture.

You may have noticed my reluctance in this morning’s lecture with the deprotonation of a methylene group while there is a hydroxyl group present. This is what you will find in most books for the base catalyzed dehydration of the aldol product.



What is wrong with that picture? Well, it does not look right to deprotonate at a C-H site when there is an O-H (much more acidic!!). What is going on then? Here is a scenario that might be a bit closer to the truth: The presence of the base makes possible the tautomerization of the beta-hydroxy carbonyl compound.

This equilibrium will lie on the left. The compound on the left will be deprotonated at the OH and no further reaction occurs. For the tautomer, there is now a choice between two hydroxyl groups. The OH group that is connected to the double bond is more acidic since the anion can delocalize. Thus: The anion that will do the elimination is the product of deprotonation of the less stable enol tautomer of the aldol product.

