

Characteristics Of Enols and Enolates

from chapter(s) _____ in the recommended text

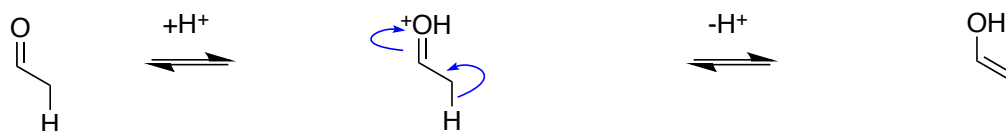
A. Introduction

B. Enols Form Under Acidic Conditions

Mechanism Of Formation

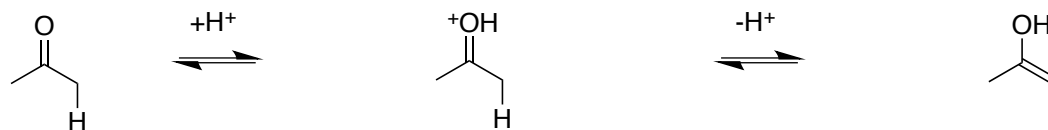
protonation

enol.



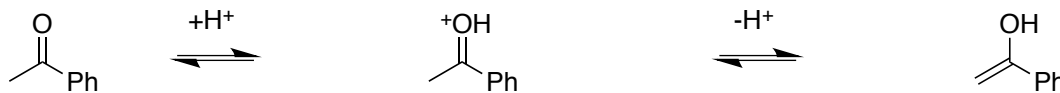
protonated carbonyl

enol form

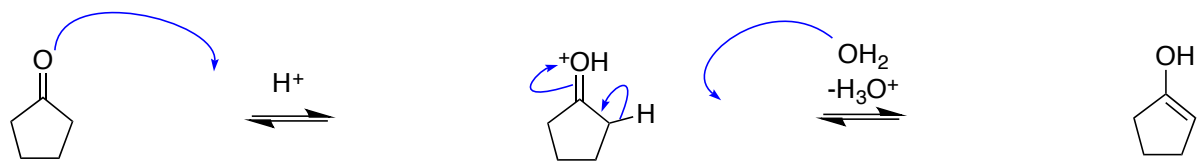


protonated carbonyl

enol form

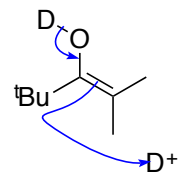
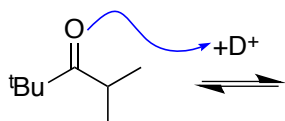


enol



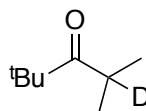
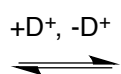
Deuterium Exchange

deuterons.

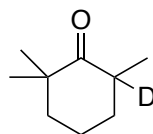
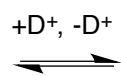
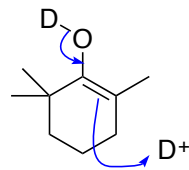
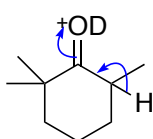
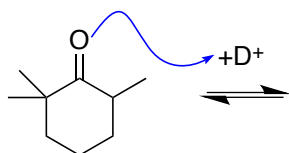


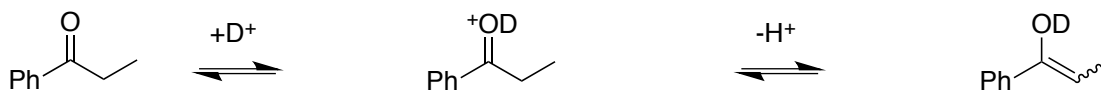
deuterated carbonyl

enol form



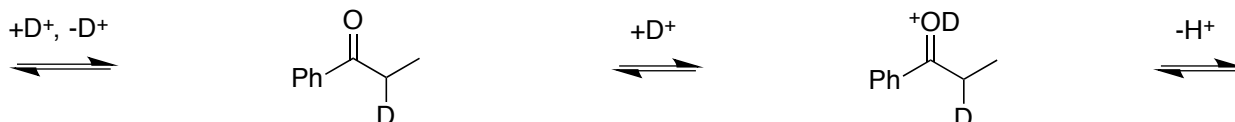
deuterated product





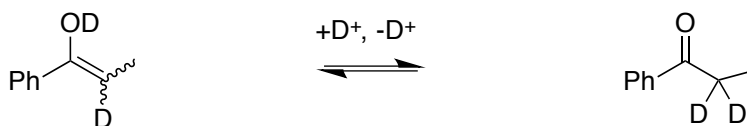
O-deuterated carbonyl

O-deuterated enol



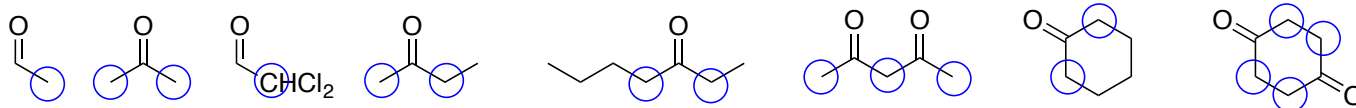
C-deuterated ketone

O-deuterated carbonyl



enol form

dideuterated ketone



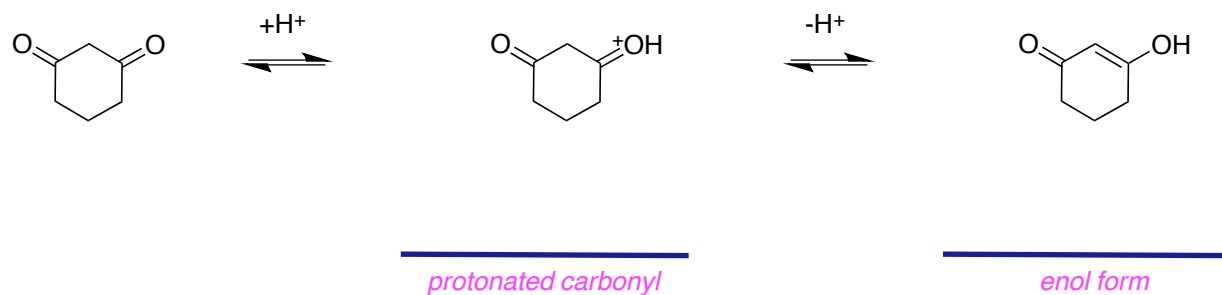
tautomerism;

Enols Of 1,2- And 1,3-Dicarbonyl Compounds

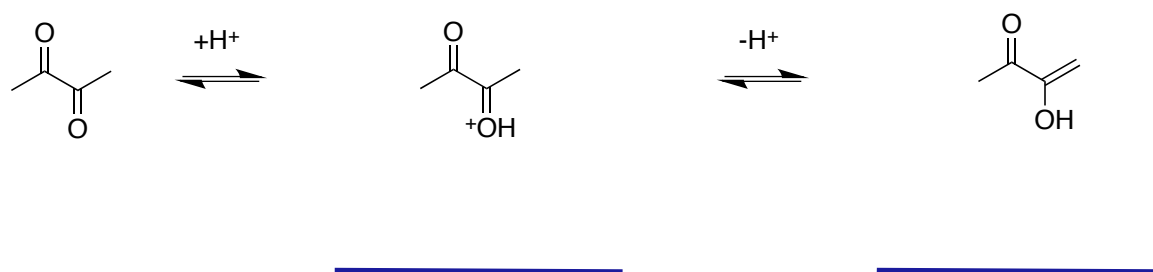
enol form

$10^6 : 1$.

enol

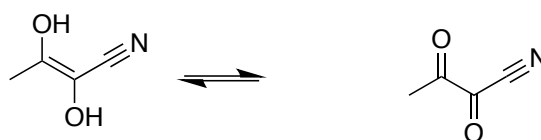
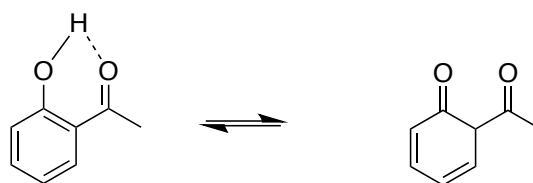
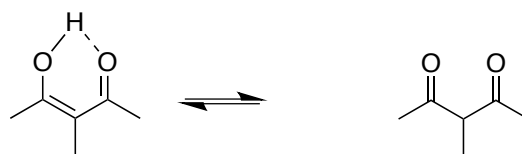
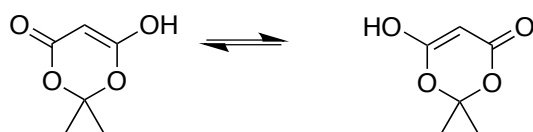
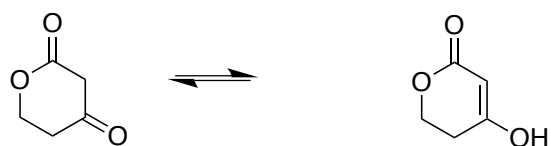
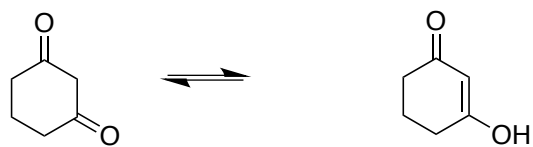


reason: Enolization of 1,3-cyclohexanedione forms conjugation between carbonyl and C=C which is stabilized by resonance, while the acetone does not have resonance effect.

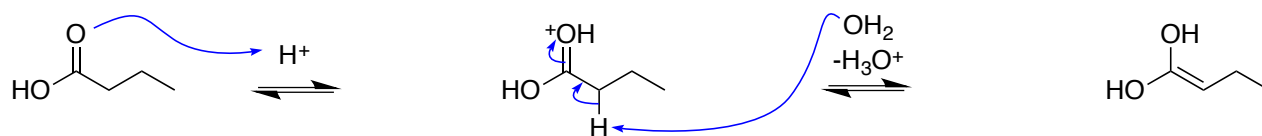
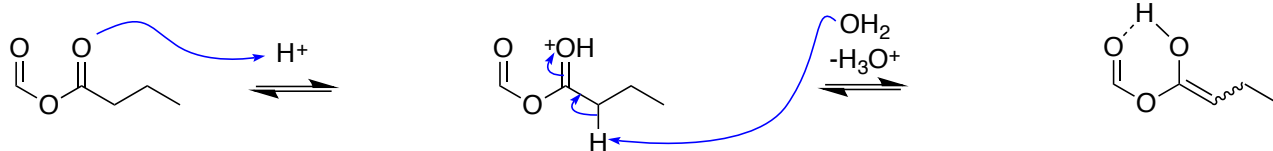
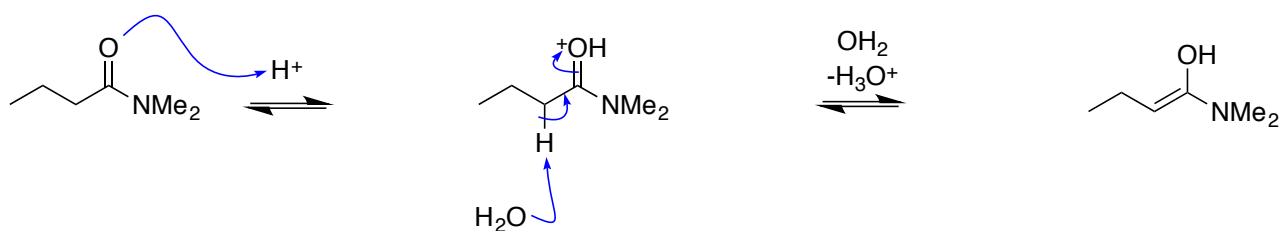
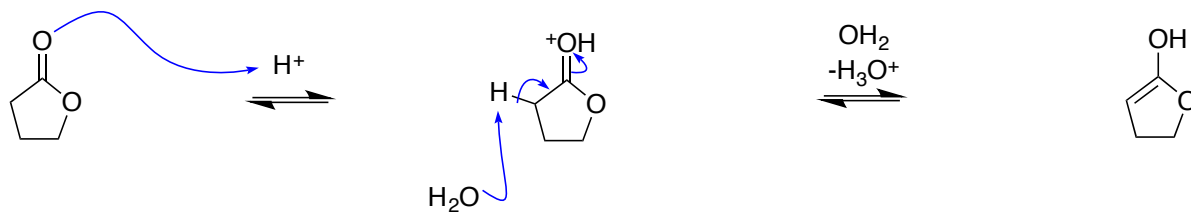


reason: Compared to acetone, one carbonyl group in the 2,3-butanedione acts as electron withdrawing group that enhances acidity of α -H.

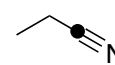
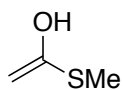
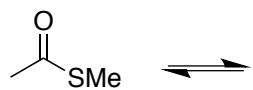
conjugates



Enols Of Other Carbonyl Compounds

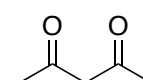
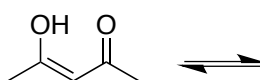
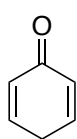
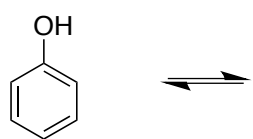


Keto-Enol Tautomers Of Other Compound Types



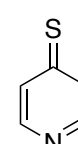
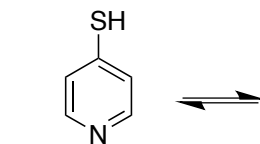
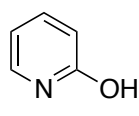
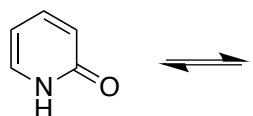
enol

keto



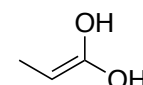
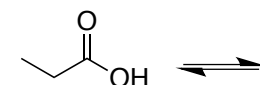
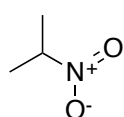
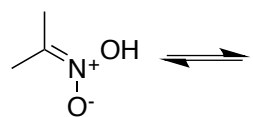
keto

keto



enol

keto



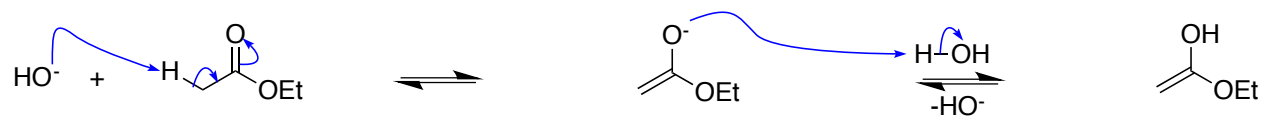
keto

enol

incorrect
they are not resonance structures.

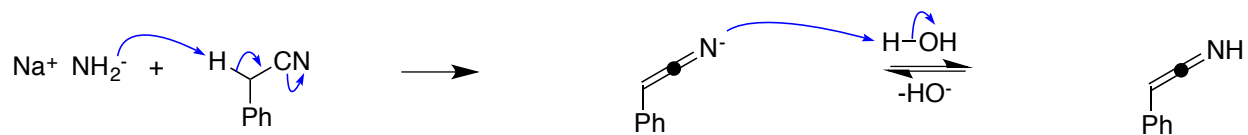
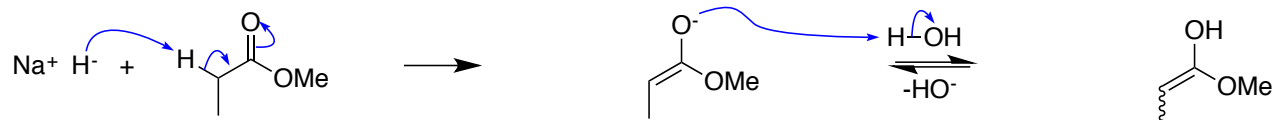
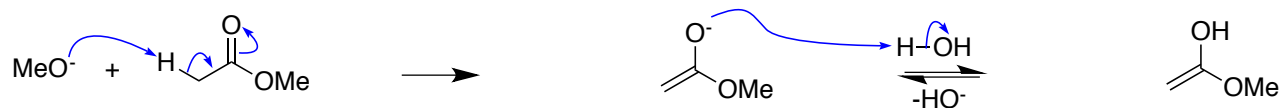
C. Enolates Form Under Basic Conditions

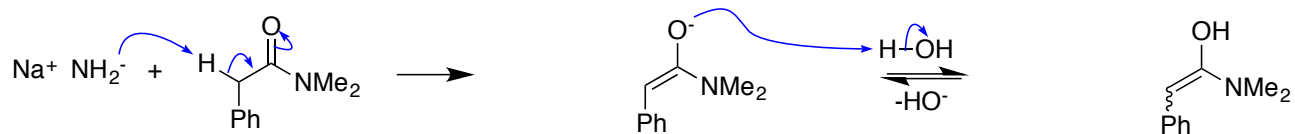
Mechanism Of Formation



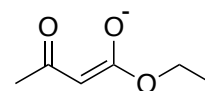
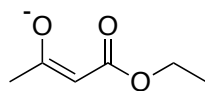
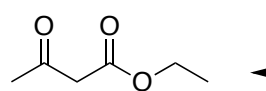
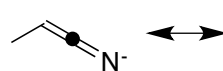
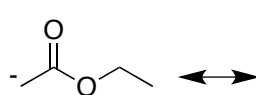
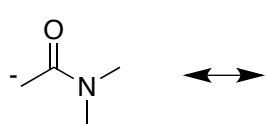
enolate

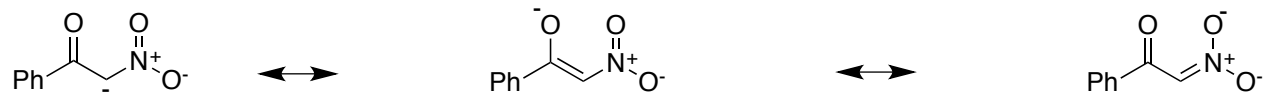
enol





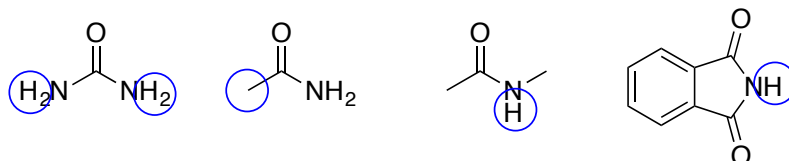
Resonance Structures Of Enolates





more
more

It *is not* easy
N-anions.

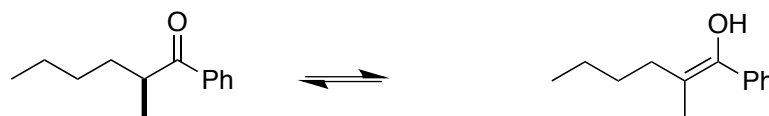


D. Effects Of Enolization

Racemization



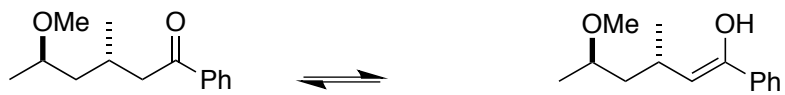
optically active



achiral

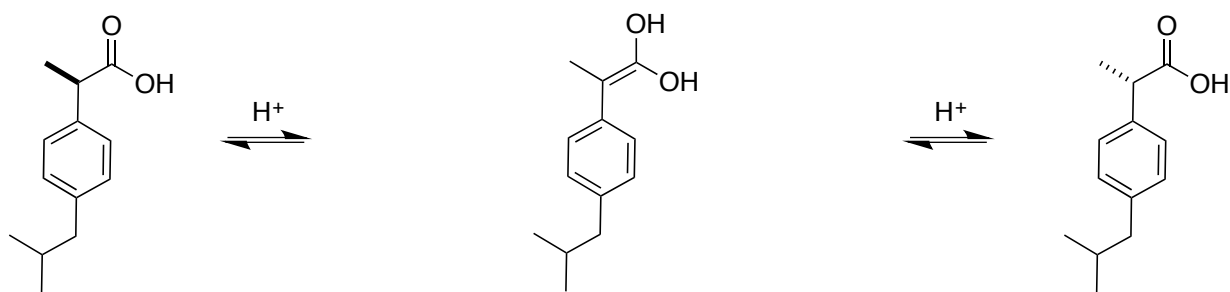


optically active



optically active

can racemize

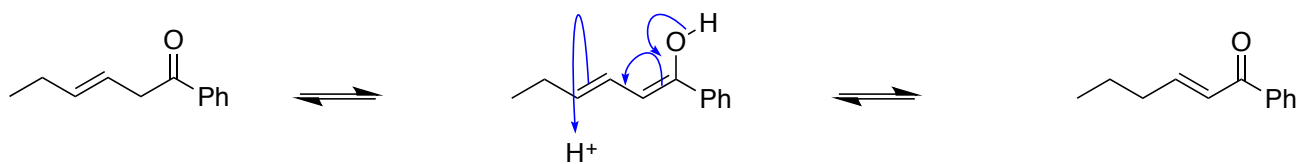


ibuprofen

enol

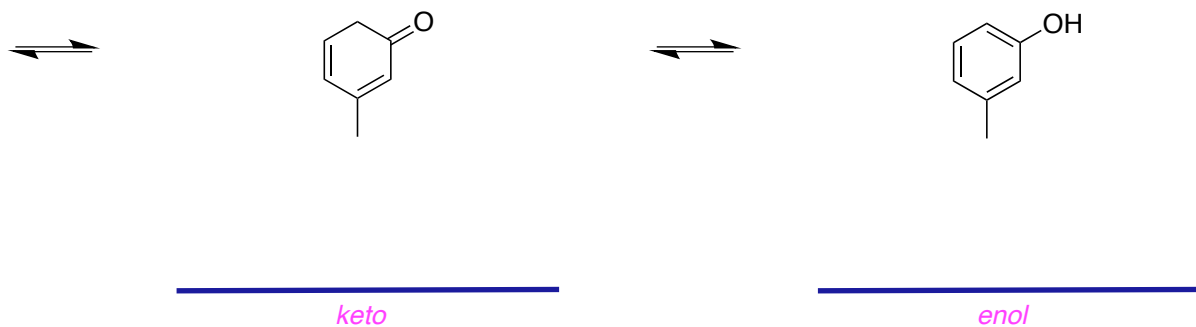
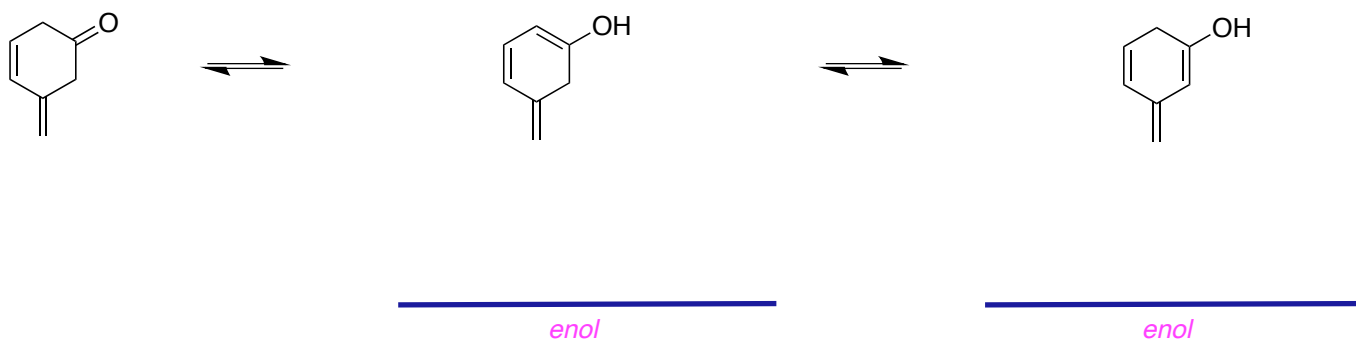
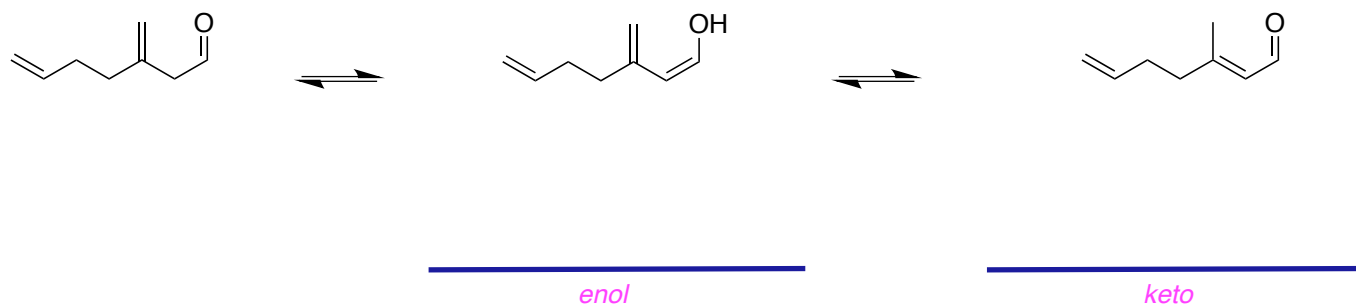
Double Bond Migration

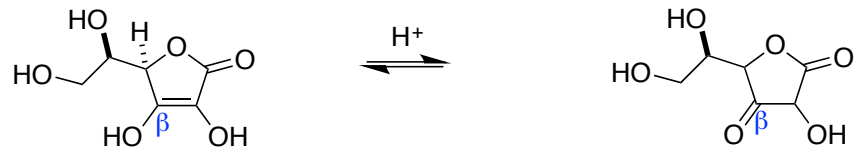
Migration



enol

keto



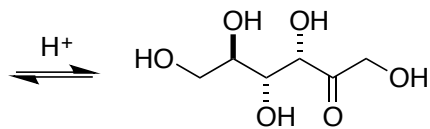


keto



glucose

enol



fructose