

# Characteristics Of Enols and Enolates

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from chapter(s) \_\_\_\_\_ in the recommended text

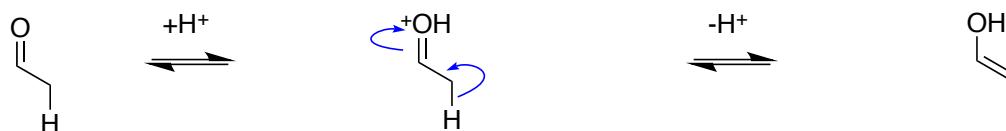
## A. Introduction

## B. Enols Form Under Acidic Conditions

### Mechanism Of Formation

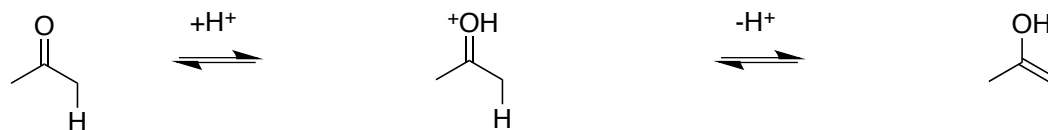
*protonation*

*enol.*



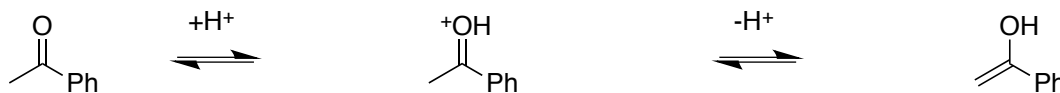
*protonated carbonyl*

*enol form*

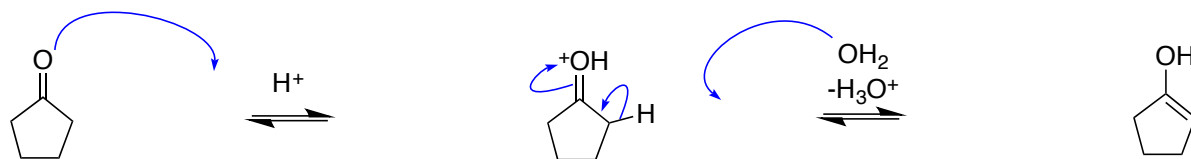


*protonated carbonyl*

*enol form*

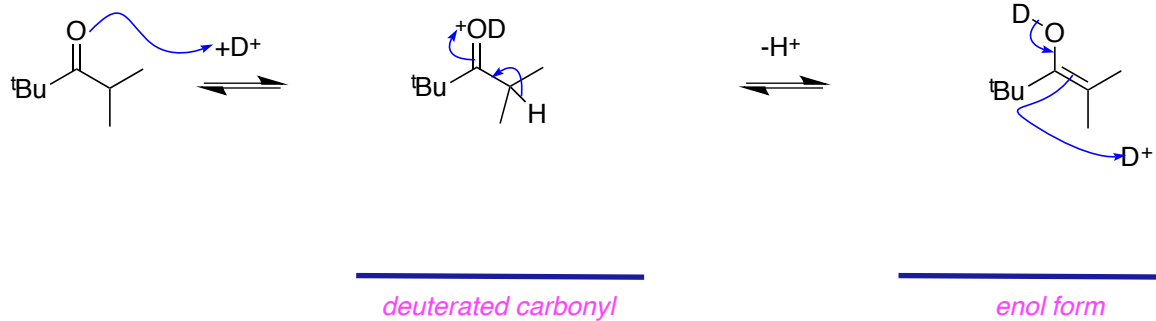


*enol*

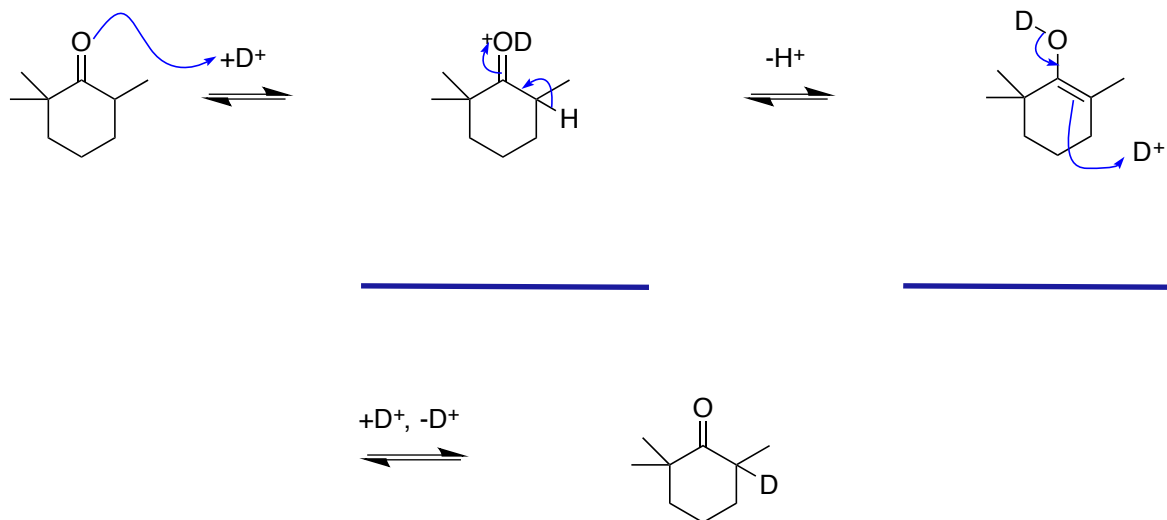


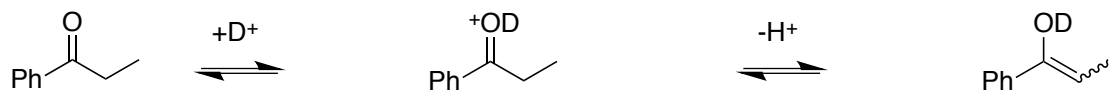
## Deuterium Exchange

*deuterons.*



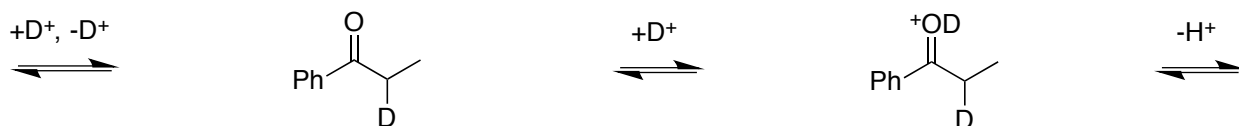
*deuterated product*





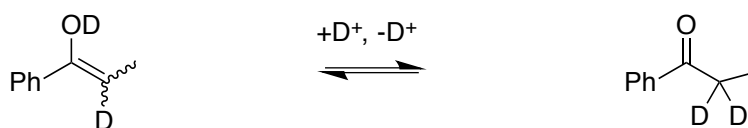
*O-deuterated carbonyl*

*O-deuterated enol*



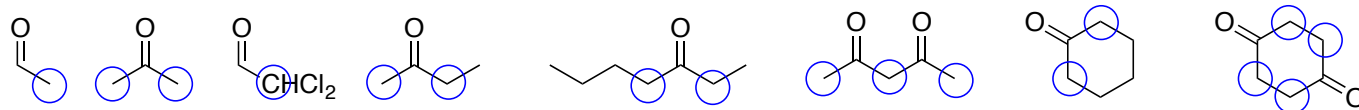
*C-deuterated ketone*

*O-deuterated carbonyl*



*enol form*

*dideuterated ketone*



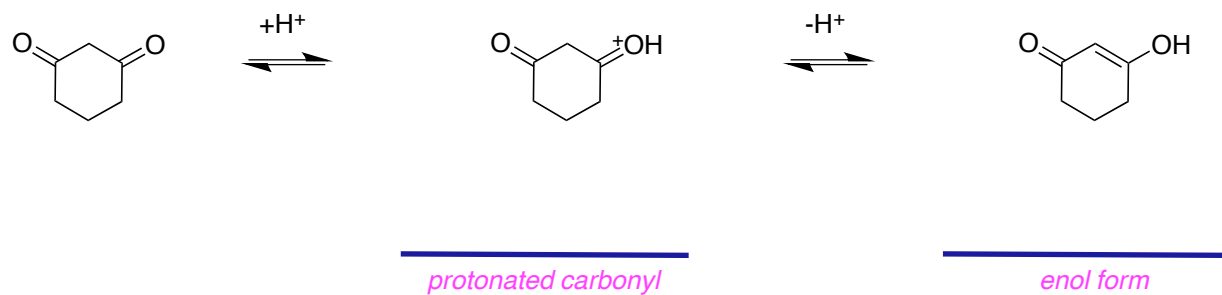
*tautomerism;*

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

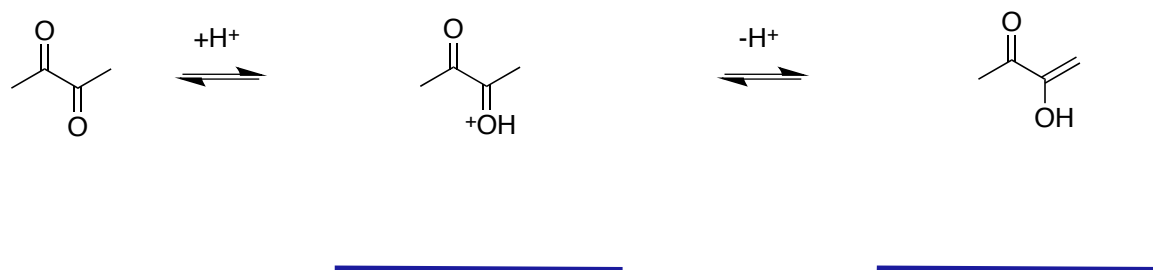
*keto* form

$10^6 : 1$ .

*enol*

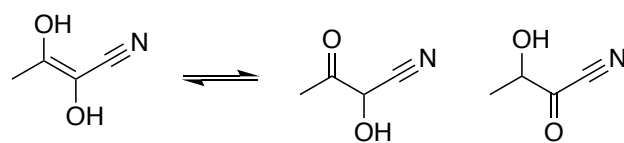
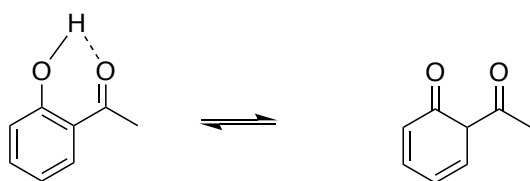
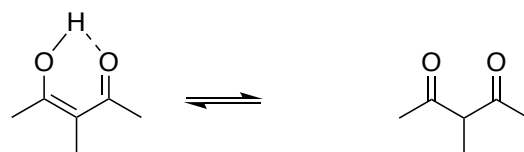
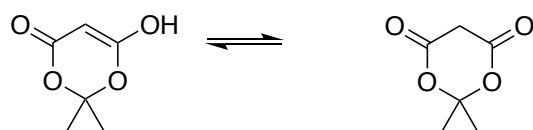
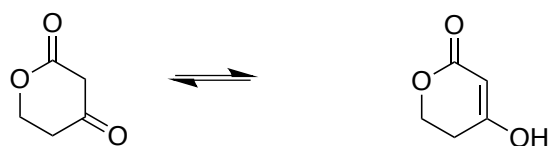
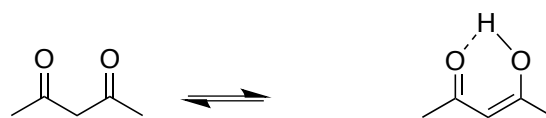
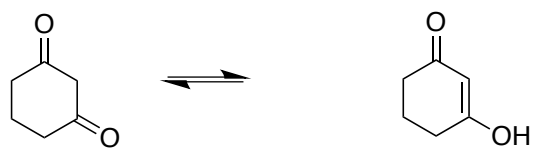


**reason:** Enolization of 1,3-cyclohexanedione forms conjugation between carbonyl and C=C which is stabilized by resonance, while the acetone does not have resonance effect.



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

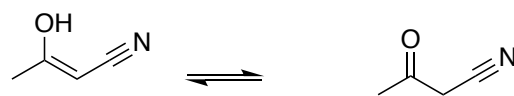
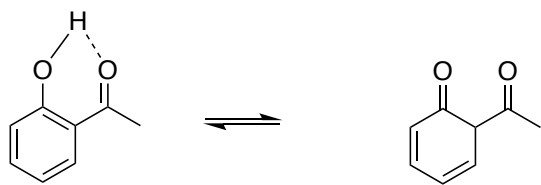
conjugates



best

second best

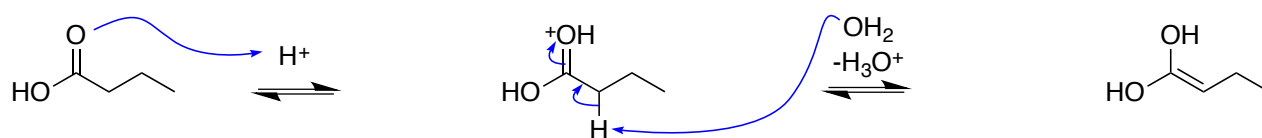
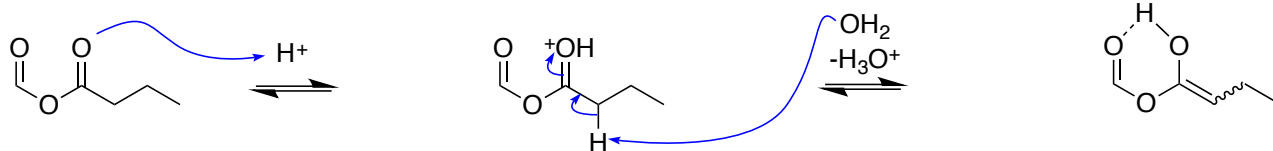
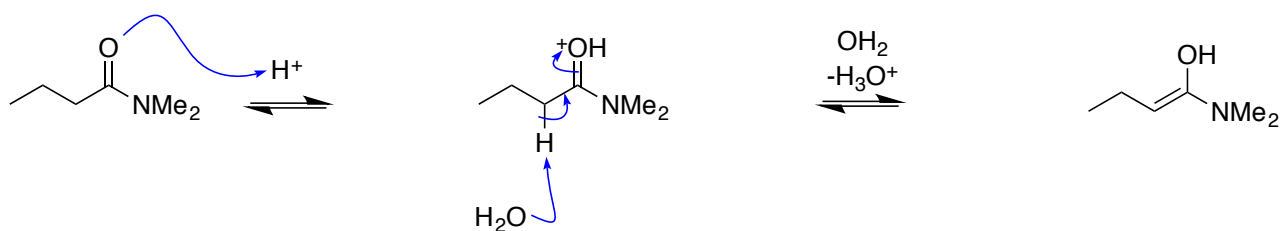
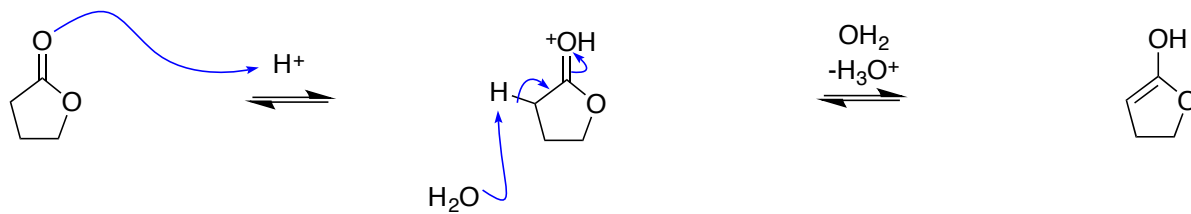
In the print the question above right will be changed to the following:



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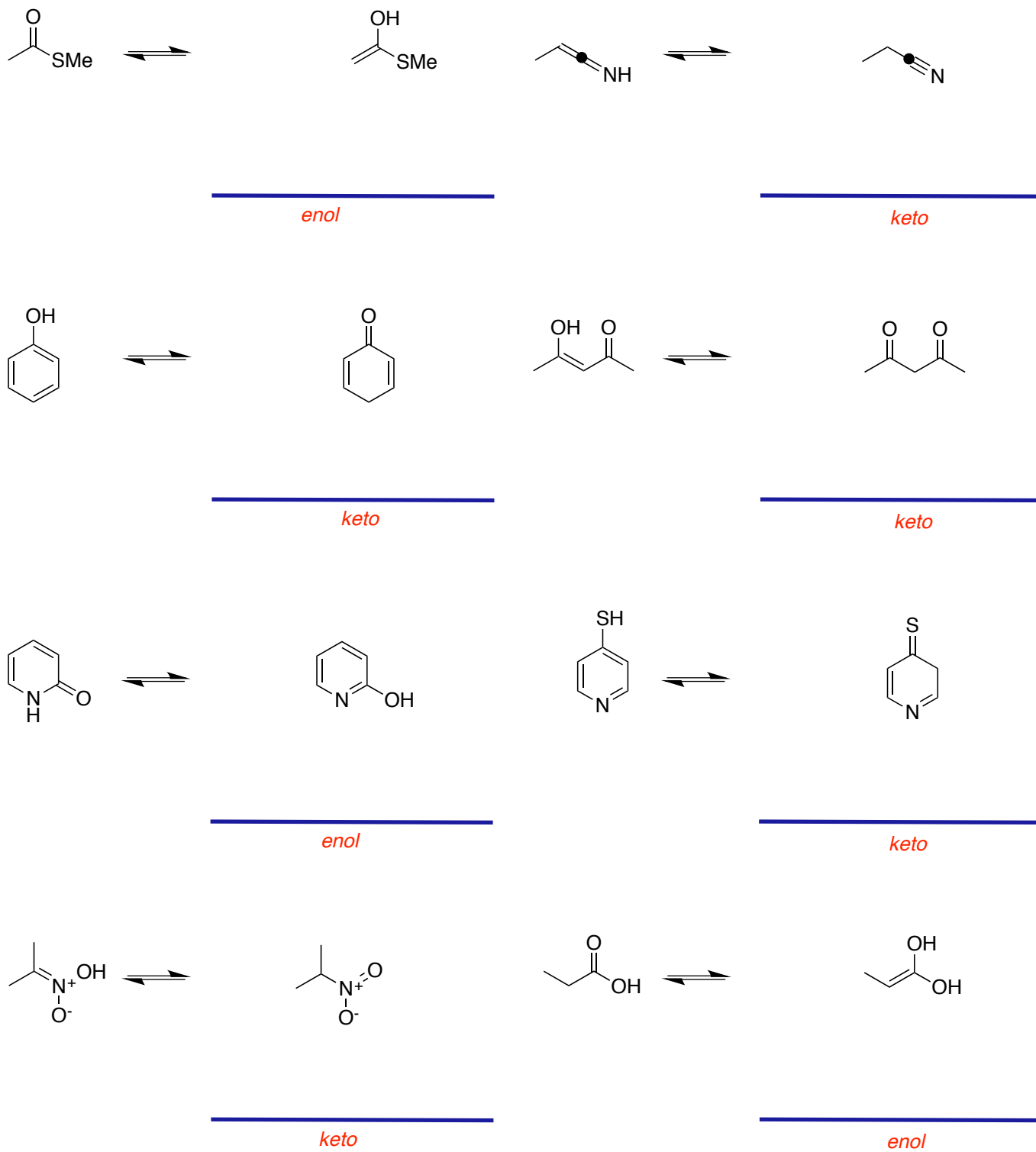
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## Enols Of Other Carbonyl Compounds





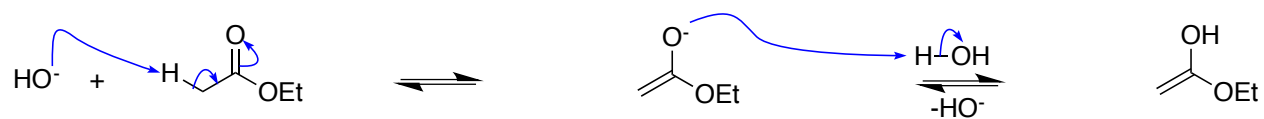
## Keto-Enol Tautomers Of Other Compound Types



*incorrect*  
they are not resonance structures.

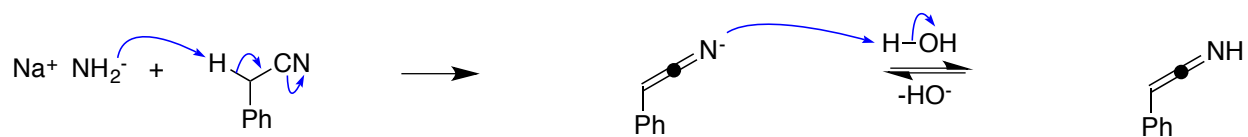
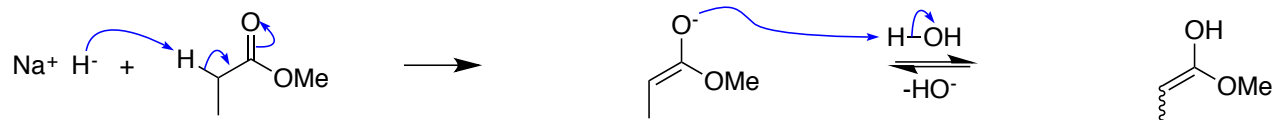
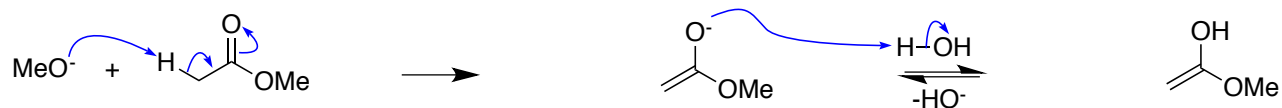
## C. Enolates Form Under Basic Conditions

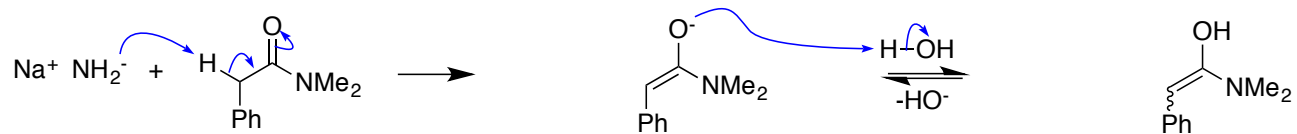
### Mechanism Of Formation



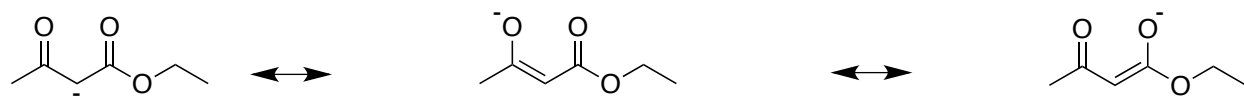
*enolate*

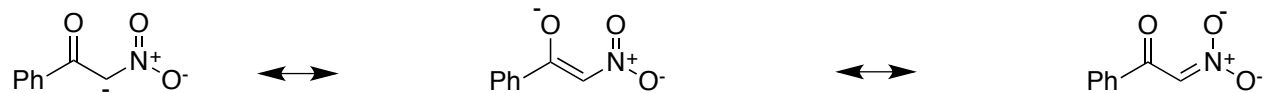
*enol*





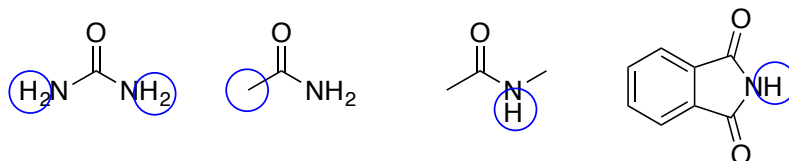
### Resonance Structures Of Enolates





more  
more

It *is not* easy  
N-anions.

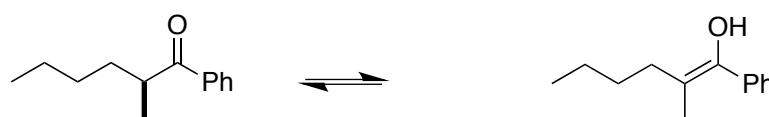


## D. Effects Of Enolization

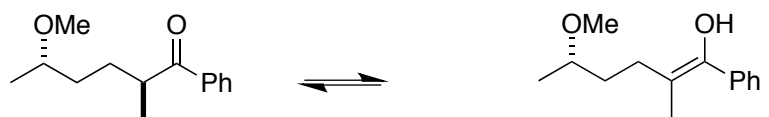
### Racemization



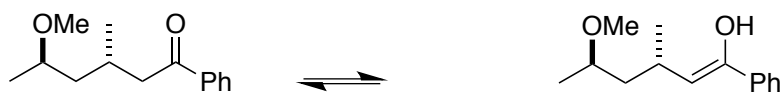
*optically active*



*achiral*



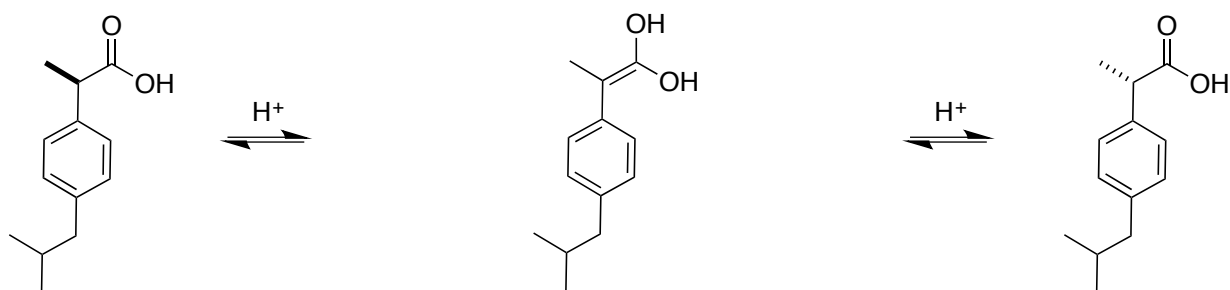
*optically active*




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*optically active*

*can* racemize



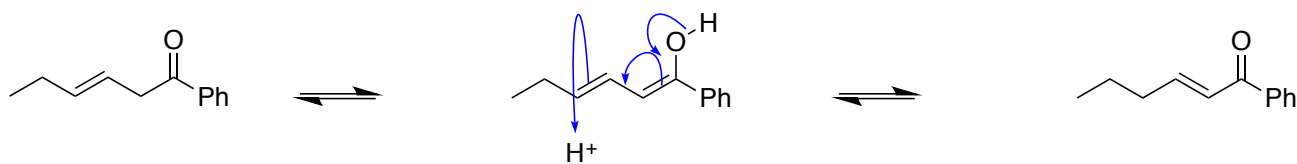
*ibuprofen*

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*enol*

## Double Bond Migration

*Migration*

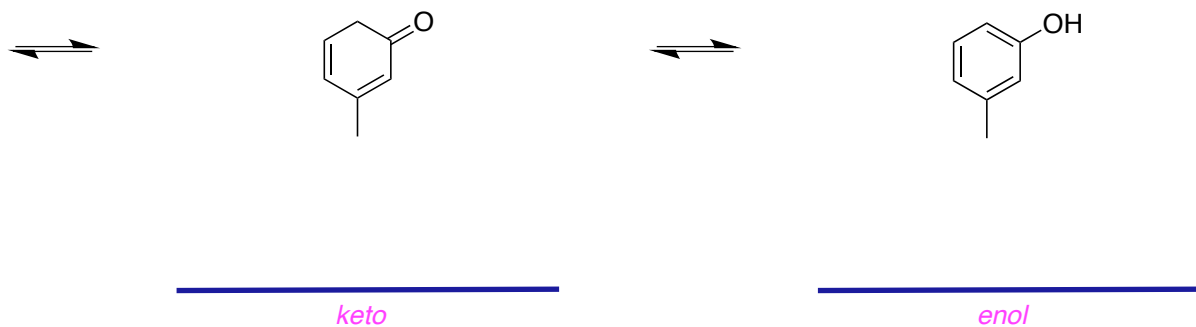
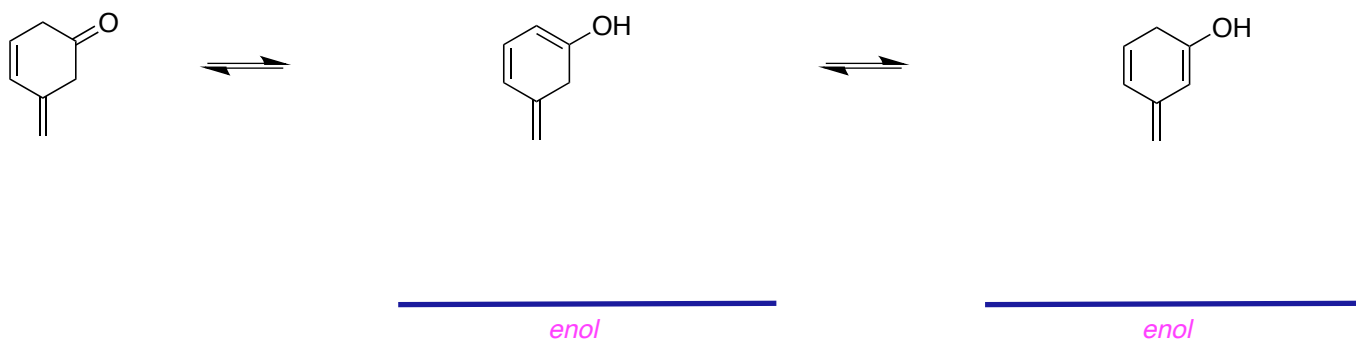
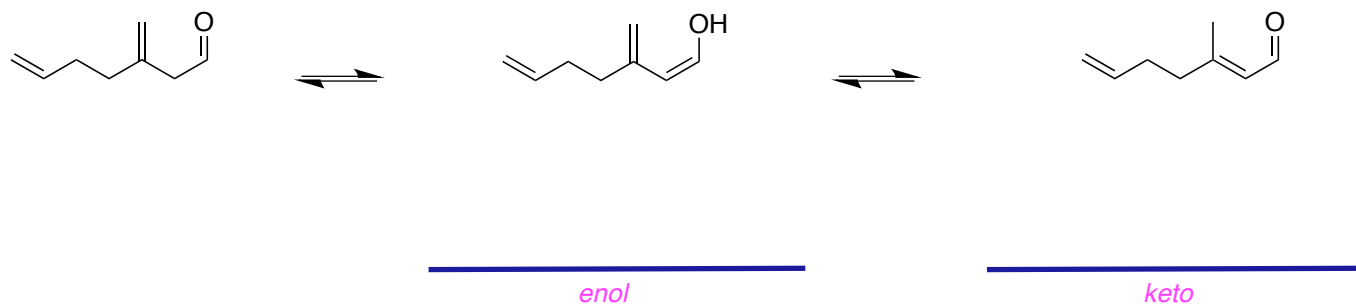


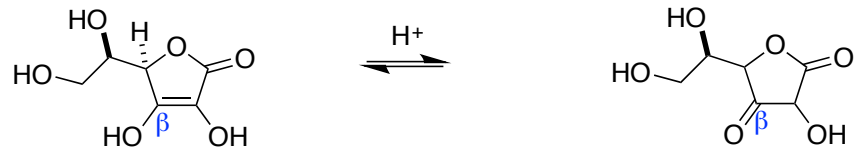

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*enol*

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*keto*





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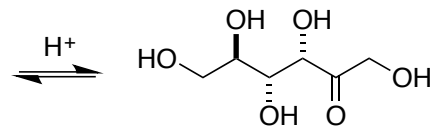
*keto*



*glucose*

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*enol*



*fructose*