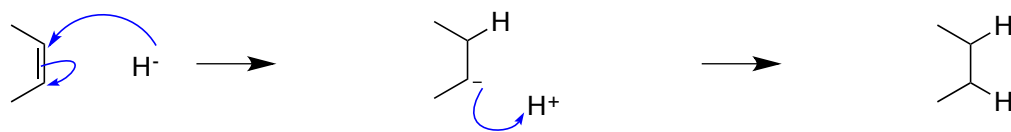


# Hydridic Reductions

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

## A. Introduction

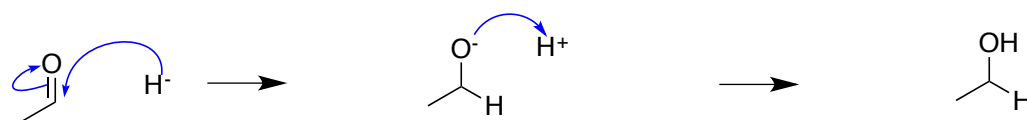
## B. Mechanism



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\_\_\_\_\_

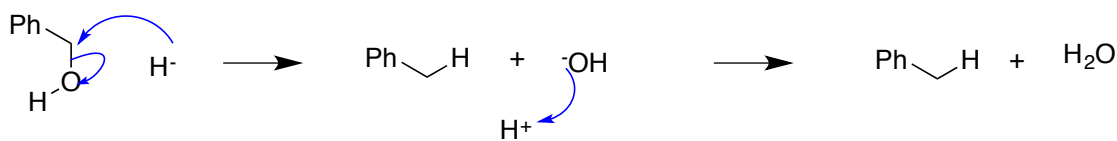
*hard*



\_\_\_\_\_

\_\_\_\_\_

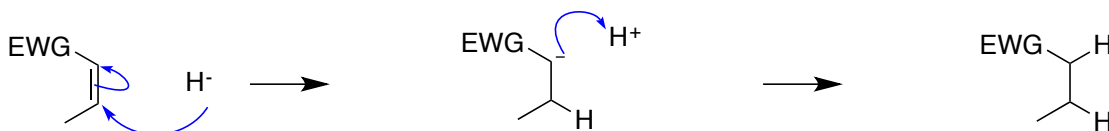
*easy*



\_\_\_\_\_

\_\_\_\_\_

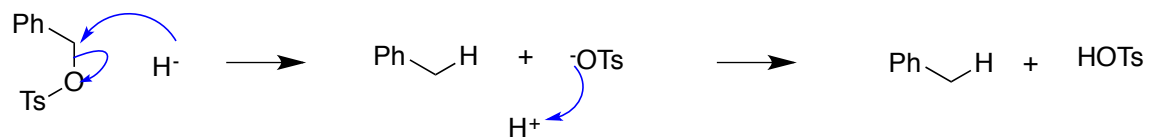
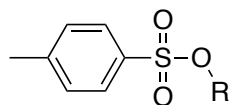
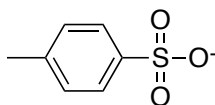
*hard*



\_\_\_\_\_

\_\_\_\_\_

*easy*

*easy**Ts**TsO<sup>-</sup>*

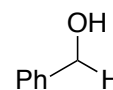
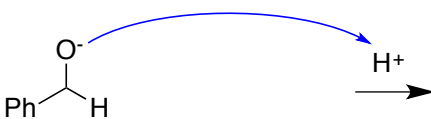
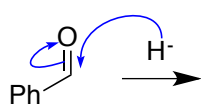
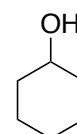
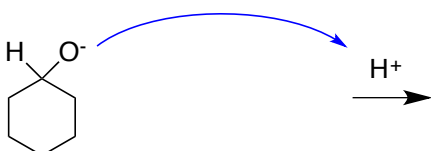
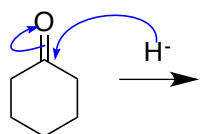
*easy* to reduce  
*hard* to reduce them

*tosylates* are  
*tosyl groups* are  
*ionic*  
*chemoselective* reductions

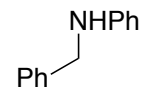
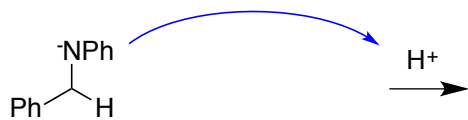
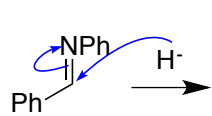
*do not* tend

### C. Substrate Scope

#### One Reduction

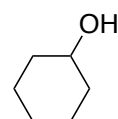
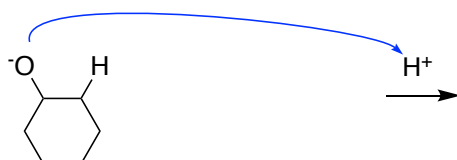
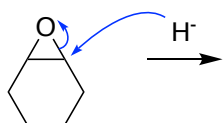
*alkoxide**alkoxide*

$\text{NaBH}_4$  because



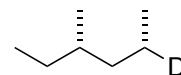
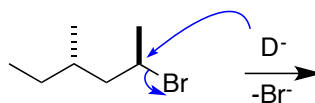
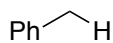
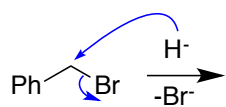
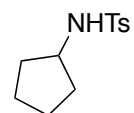
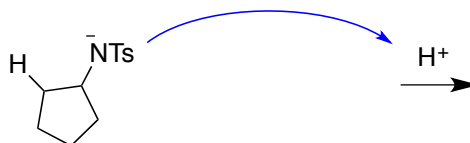
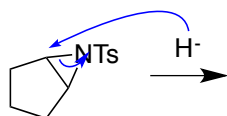

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*amide anion*




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*alkoxide*

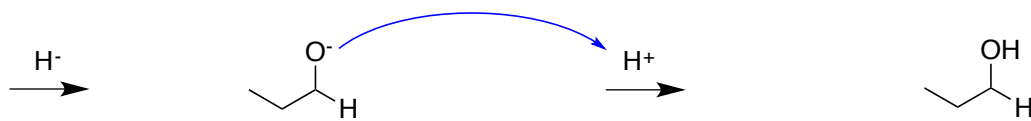
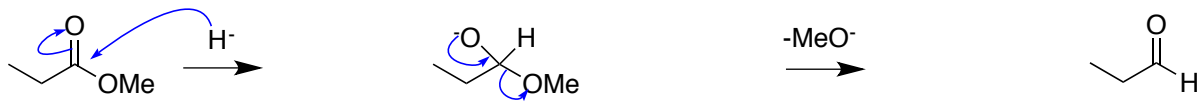



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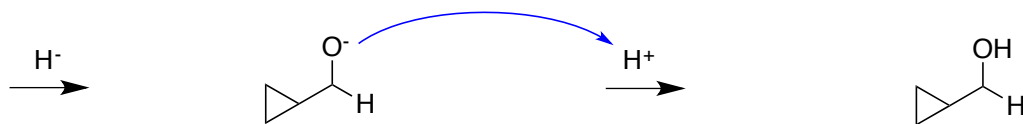
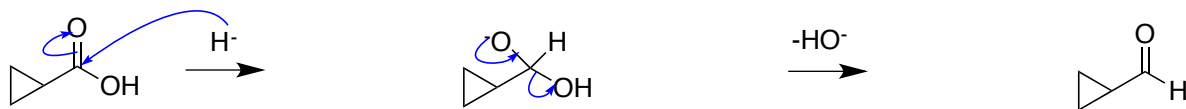
*this reaction proceeds with inversion*

It takes 2

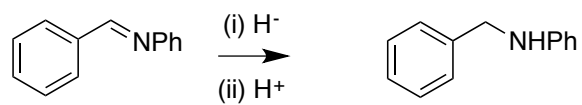
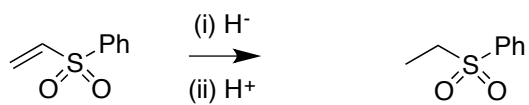
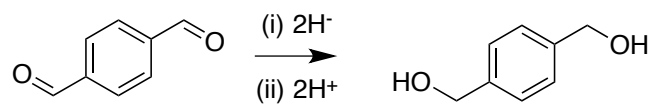
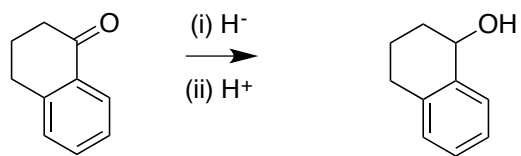
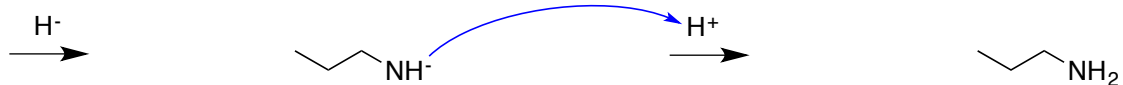
## Two Step Reductions



*alkoxide*

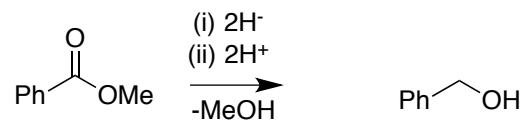
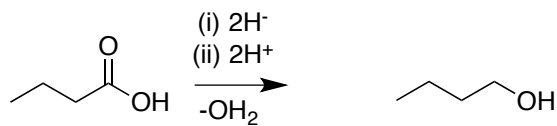
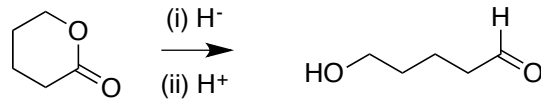
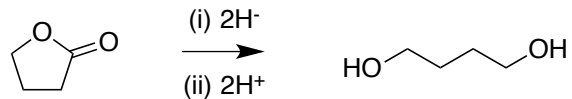
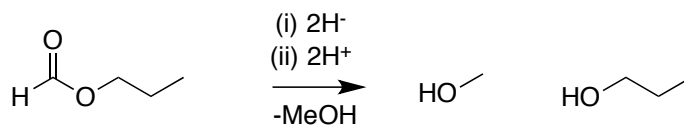
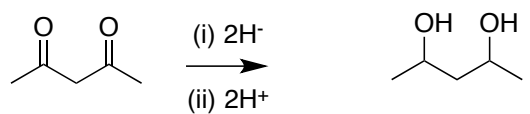
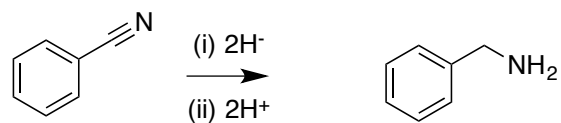
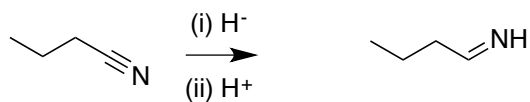


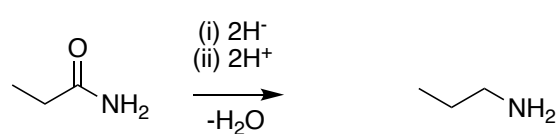
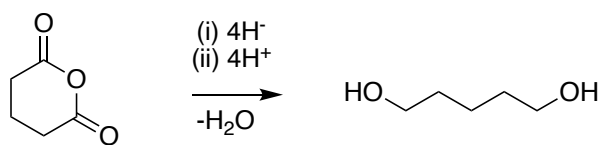
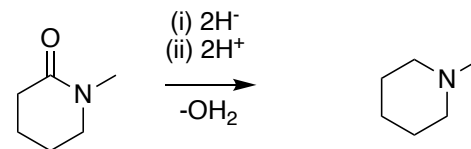
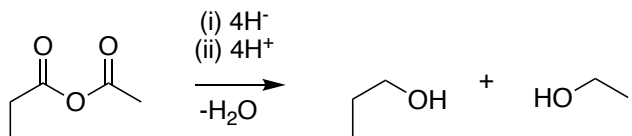
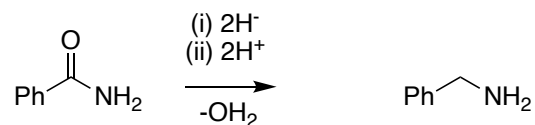
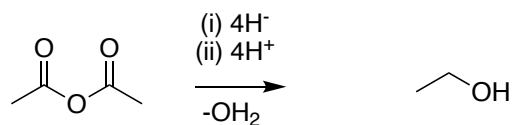
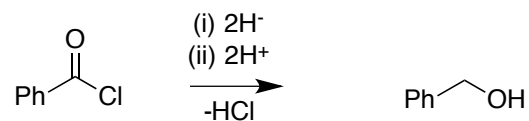
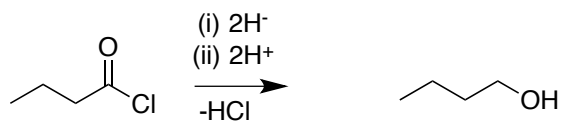
*alkoxide*



*sulfone*

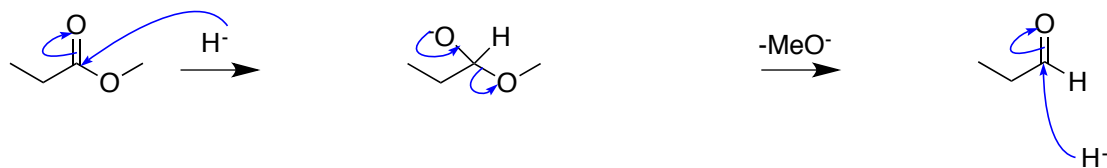
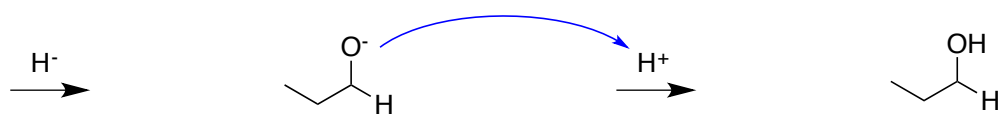
*imine*



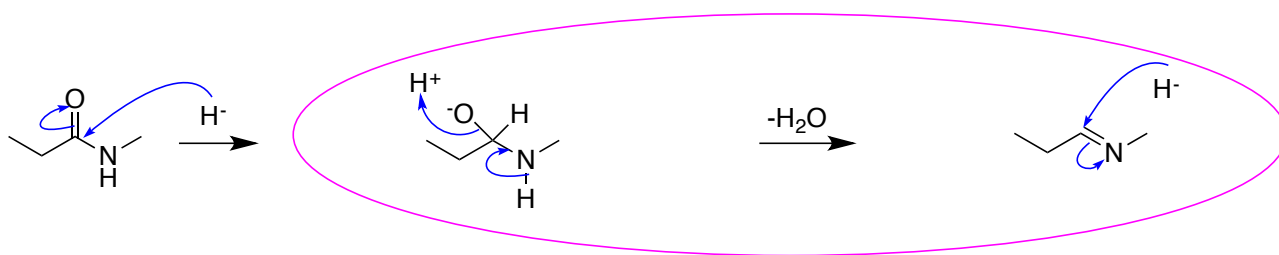
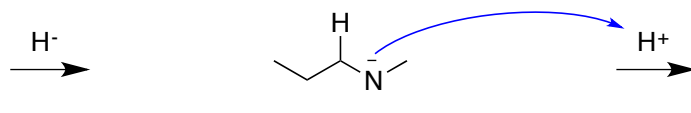


## Difference Between Hydridic Reductions Of Amides And Esters

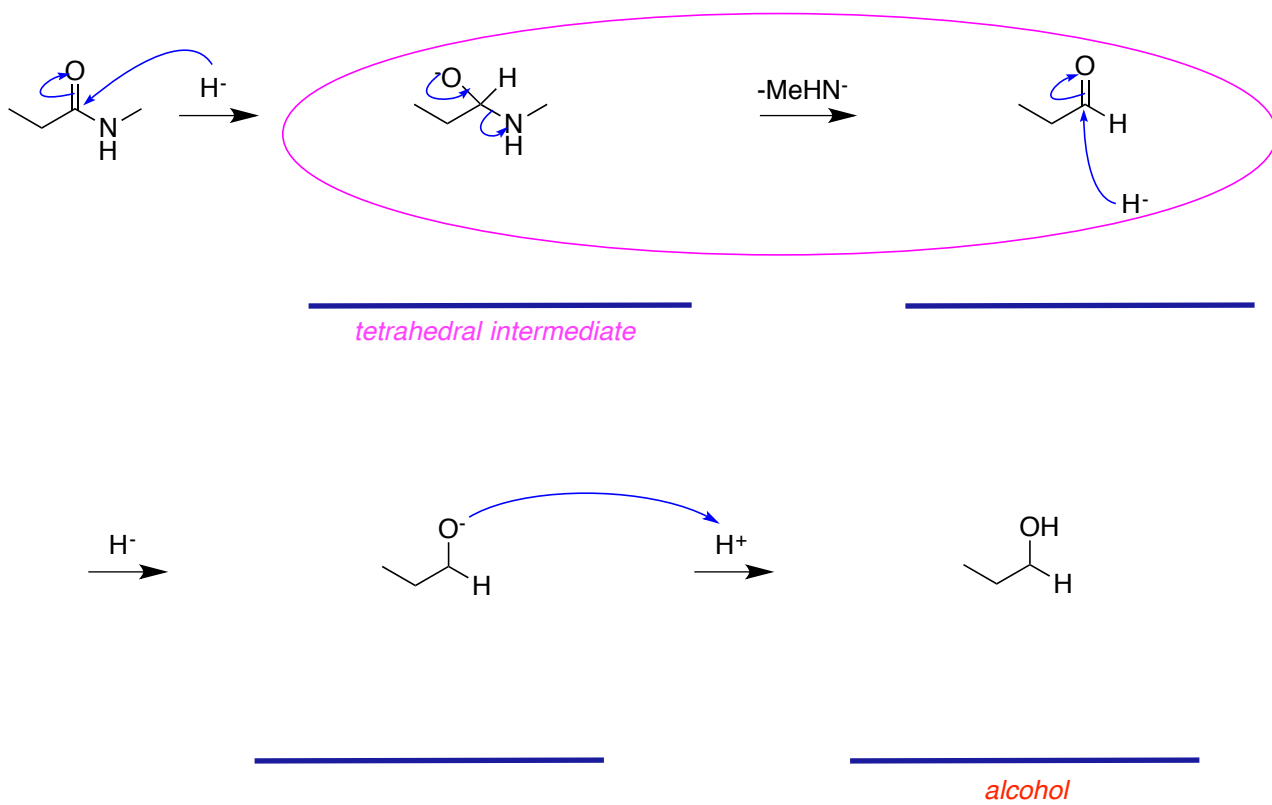
a

*tetrahedral intermediate**aldehyde**alkoxide*

b

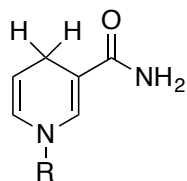
*tetrahedral intermediate**imine**amine*



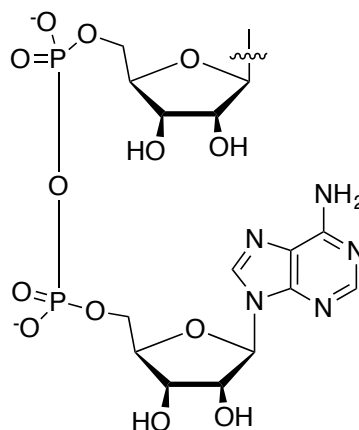
**c**mechanism **b**.

Because the amine anion is not a good leaving group.

## D. NADH: A Hydride Source *In Vivo*



R =




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*NADH full name: Reduced nicotinamide adenine dinucleotide*




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*by-product full name:  
Nicotinamide adenine  
dinucleotide (NAD)*

is *NAD*.

