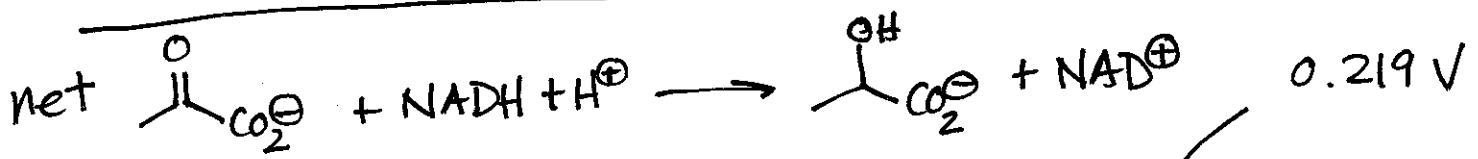
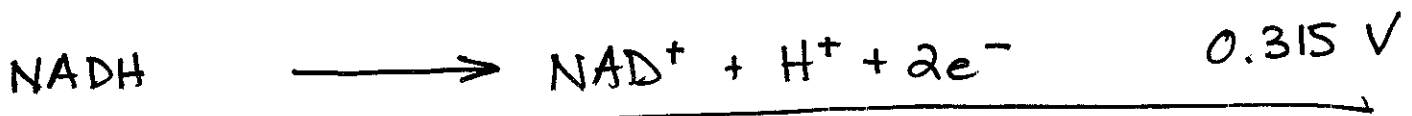
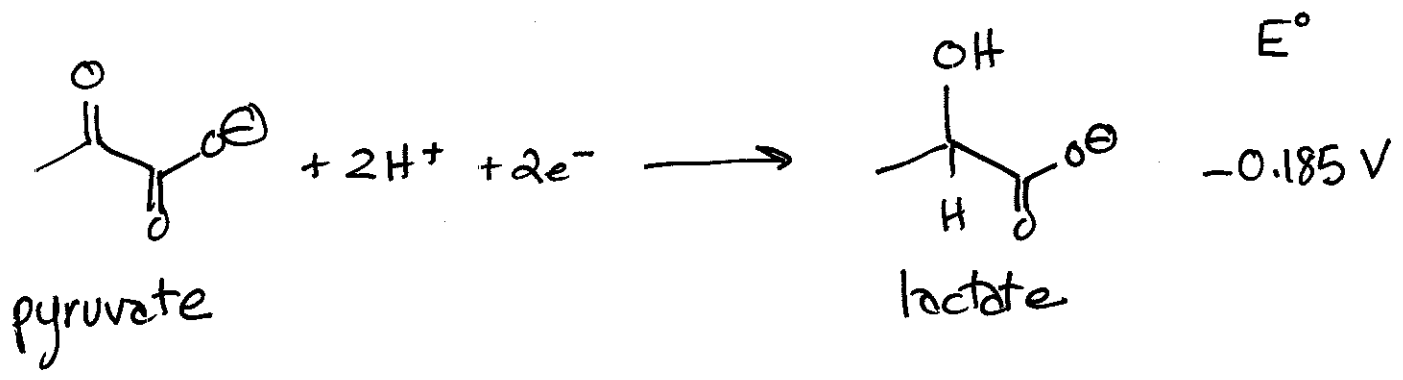
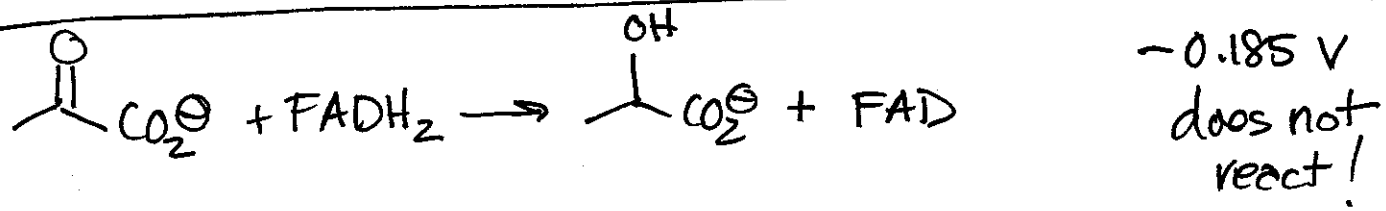
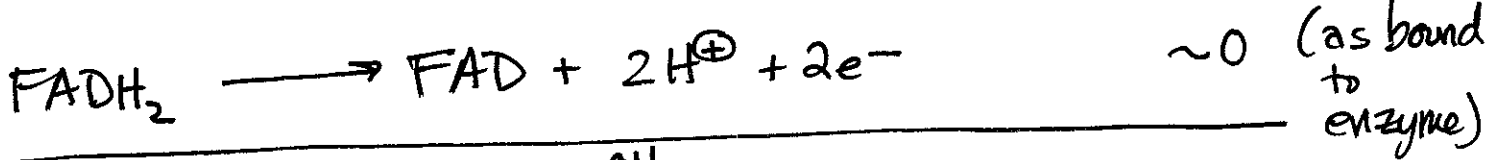
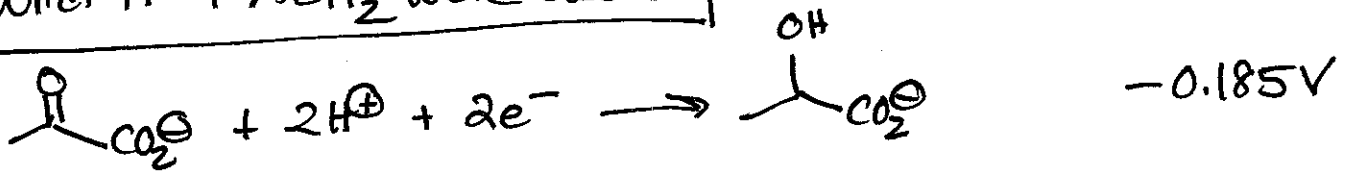


reduction of pyruvate



based upon
 $\Delta G^\circ = -nFE^\circ$
 this is a
 spontaneous rxn

What if FADH₂ were used?



Can FAD oxidize lactate?

3.

This is the reverse of the 2nd rxn.

The net reverse rxn would be

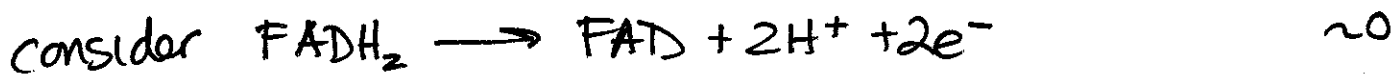
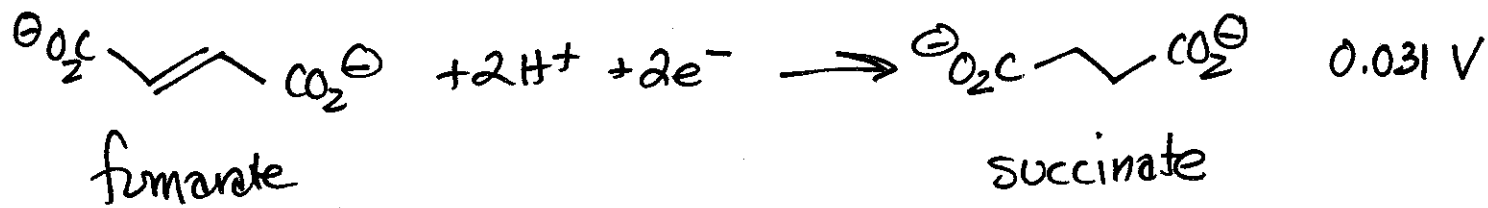


so this is a spontaneous rxn.

In general, can FAD oxidize 2° alcohols? Again, it depends on the particular 2° alcohol. Each case may be different, and keep in mind the exact rxn conditions in an organism are not the standard conditions assumed for E° & ΔG° .

Answer to Question Posed in Class -

Which cofactors can reduce fumarate to succinate?



so this works, barely



so this works quite well.

So either reagent can reduce fumarate, and neither reverse rxn is favorable (though one is close)

See for instance Step 8 in Fig 3.12, compared to Step 1 in Fig 3.6