

# Reductions Via Electrons And Radicals

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

## A. Introduction

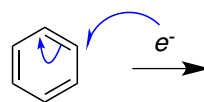
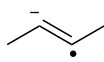
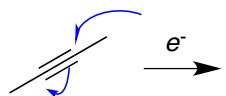
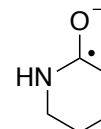
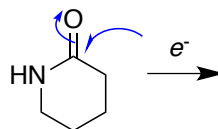
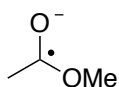
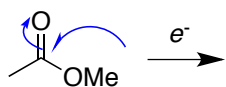
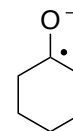
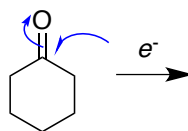
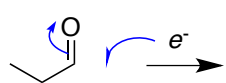
## B. Reductions Via Free Electrons

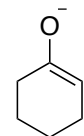
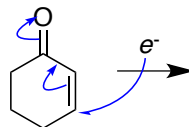
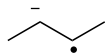
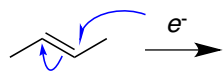
### Addition Of One Electrons

a *radical anion*

*proton* orbited

*radical anion*

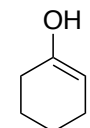
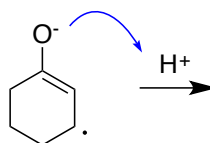
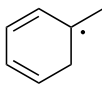
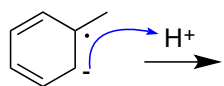
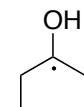
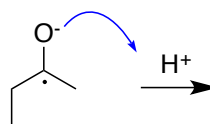
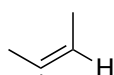
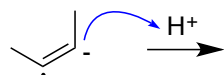




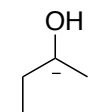
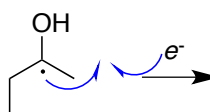
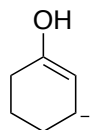
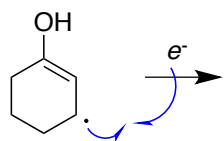

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### Addition Of One Electron Then Protonation

*a radical*

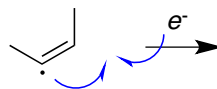
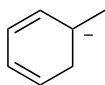
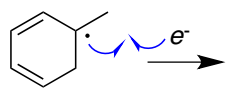


*dianion*  
*an anion*

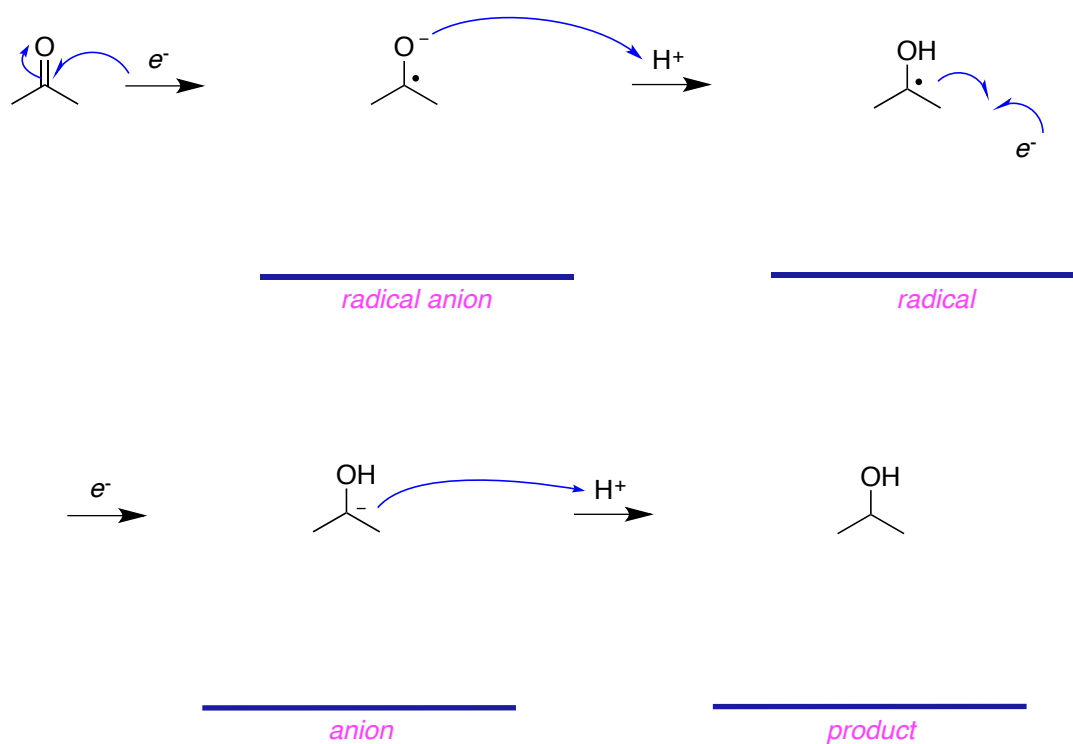



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ANIONS LIKE THAT SHOWN ABOVE UNDERGO RAPID PROTON TRANSFER TO GIVE ALKOXIDES BEFORE PROTONATION

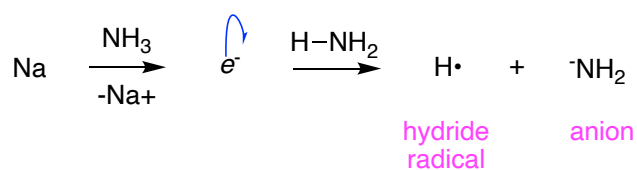


*addition of two hydrogens.*



ANIONS LIKE THAT SHOWN ABOVE WILL UNDERGO RAPID PROTON TRANSFER TO GIVE ALKOXIDES BEFORE PROTONATION

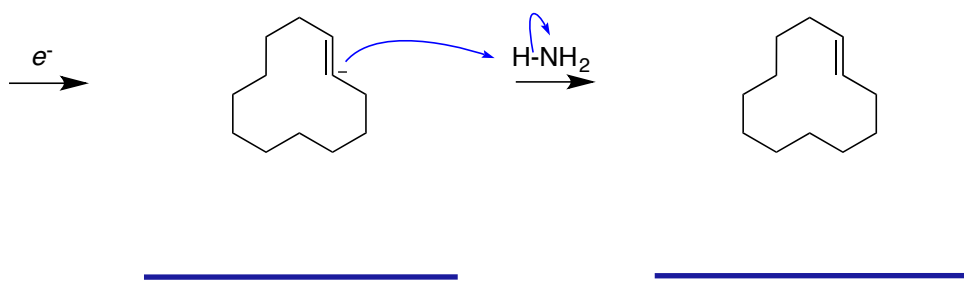
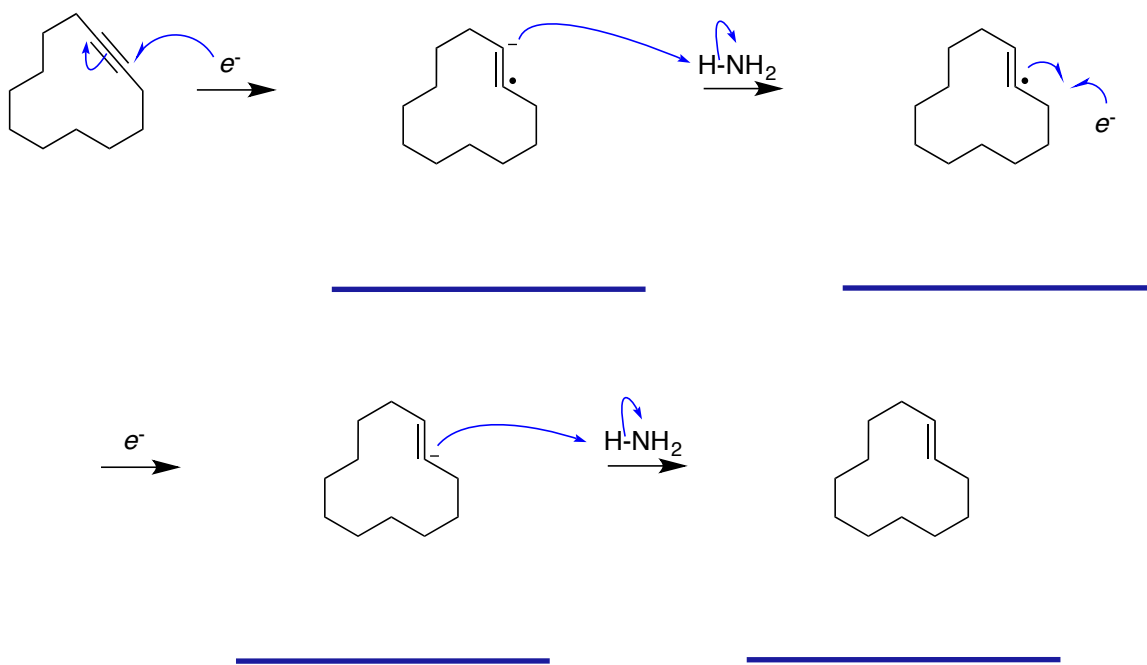
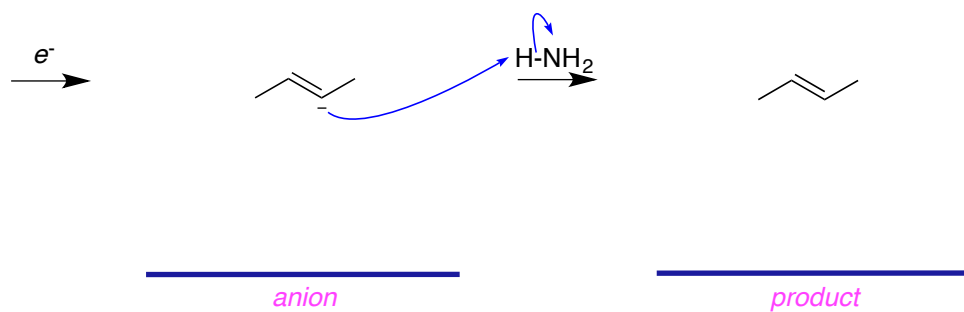
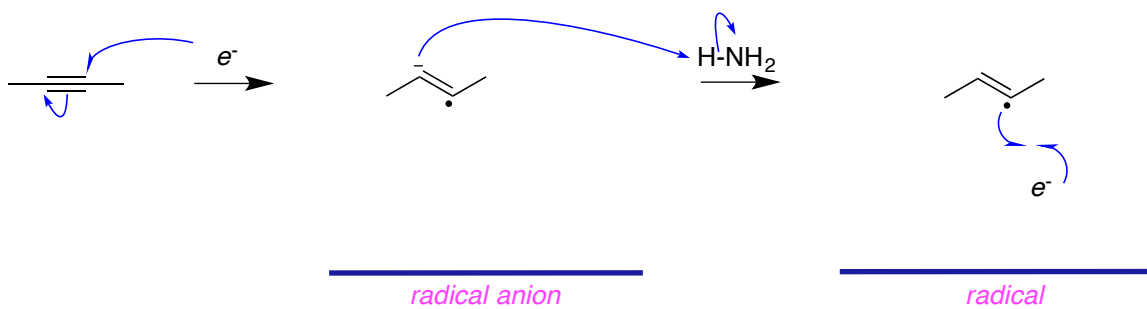
*oxidize* to Sm(3+)  
*sodium amalgam*  
*inky-blue* solution.



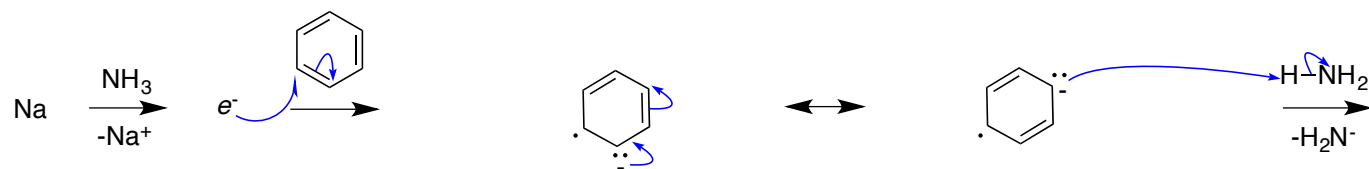
*anion*

### Cycles Of Electron Addition Then Protonation

*trans*-geometry  
*equivalent* to

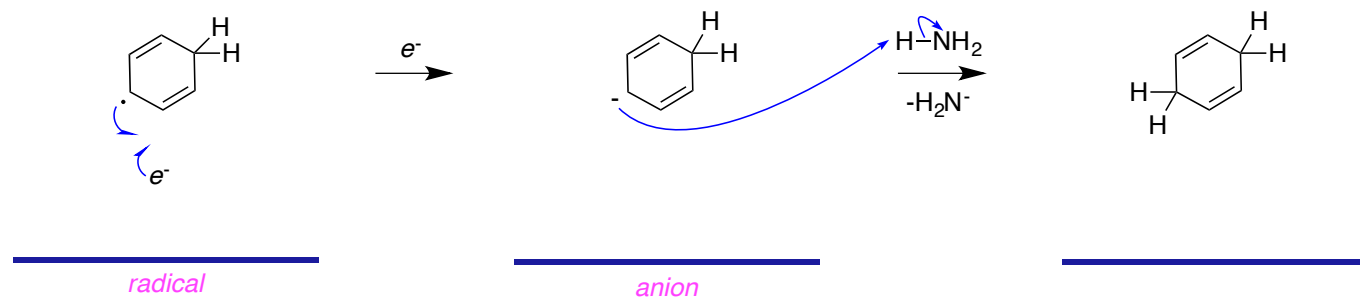


*a radical*, then another electron to form *an anion*  
2




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*radical anion*



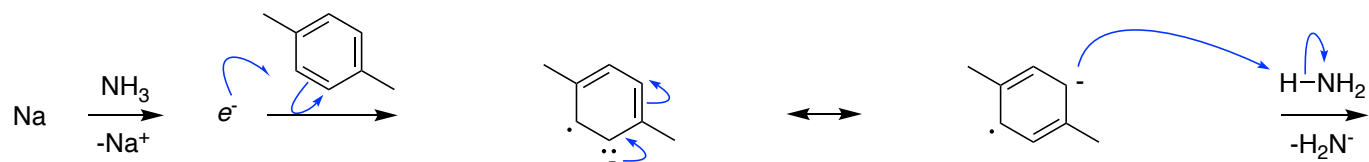

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*radical*

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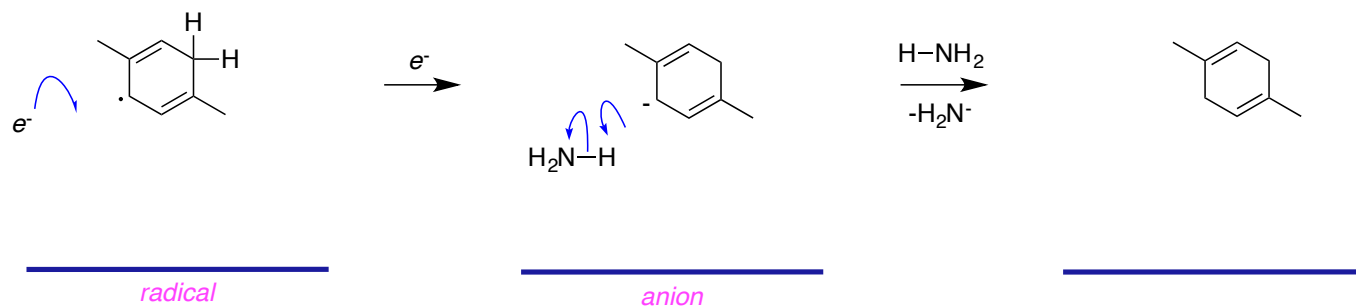
*anion*

*HOMO  
non-conjugated*



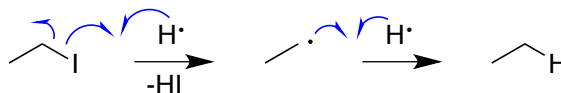

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*radical anion*



## C. Reductions Via Radicals

*reduction*

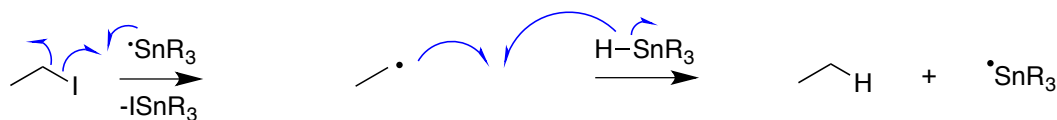


*kinetic* effects

*more than stoichiometric* amounts



*chain initiation*



*chain propagation*

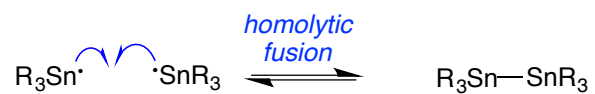
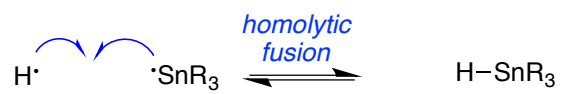
*radical*

*products*

*another tin radical.*

*regenerated many times.*

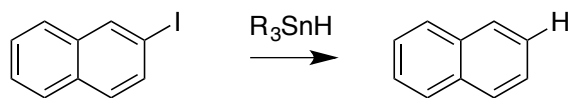
concentration is *low*.



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would not

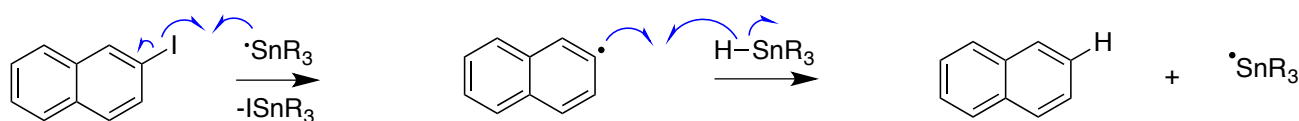




chain initiation



chain propagation



radical

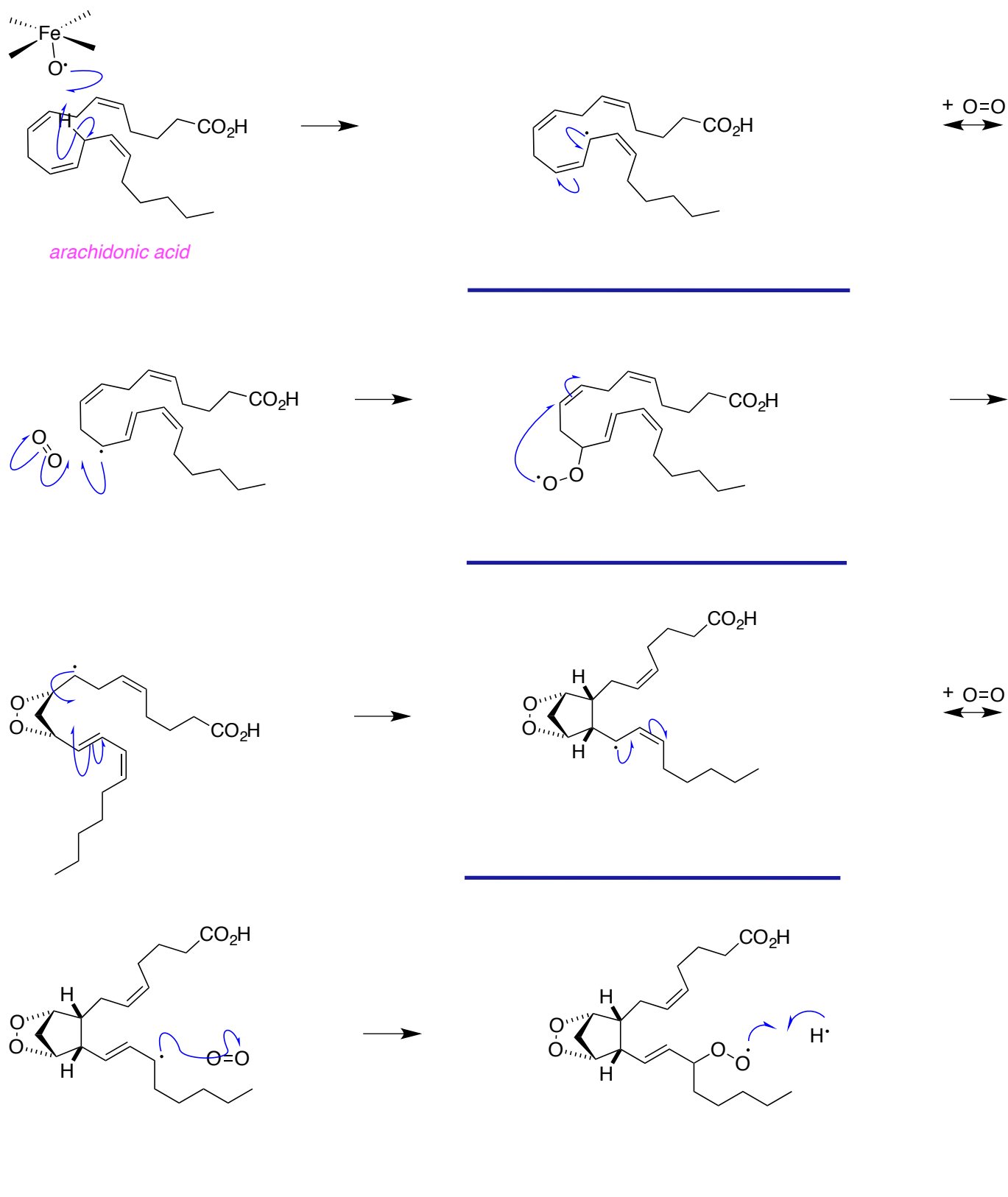
products

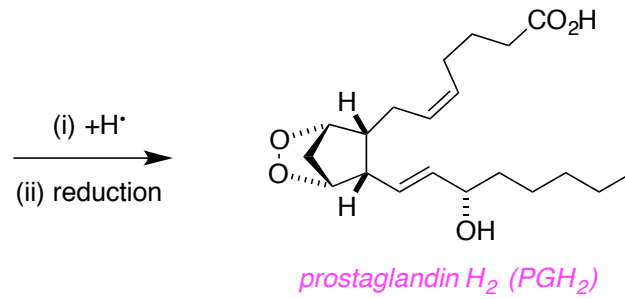
chain termination



would not change

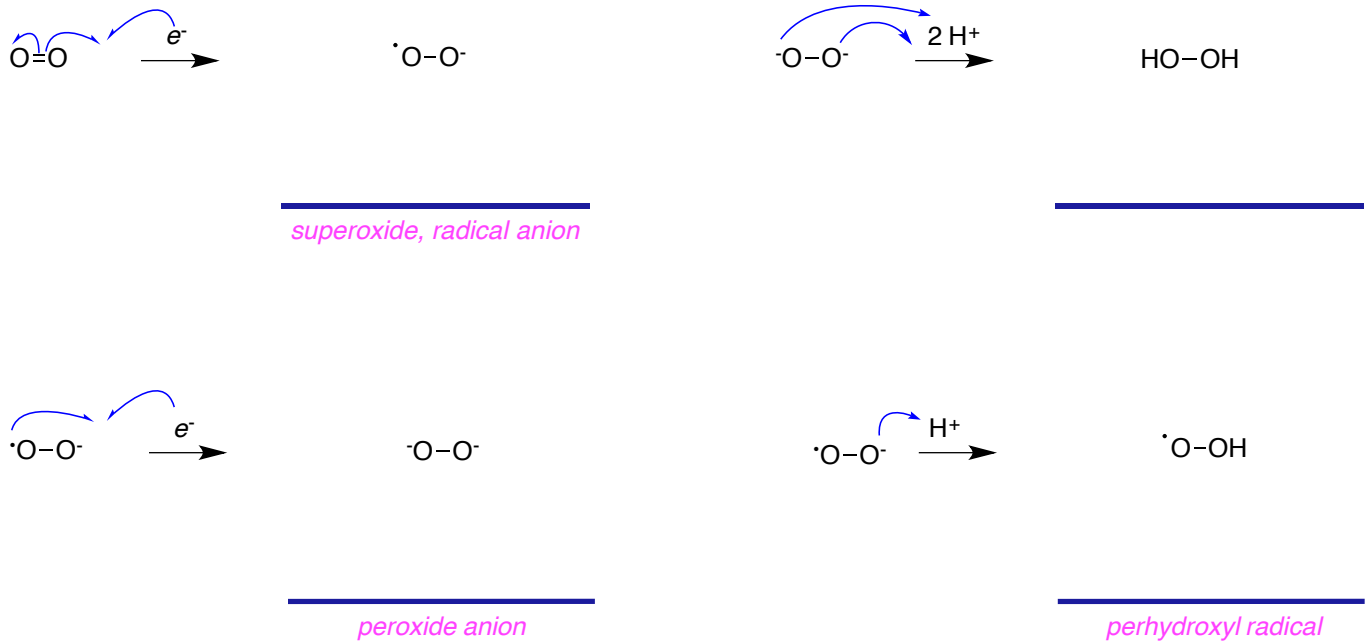
## D. Biosynthesis Of Prostaglandin H<sub>2</sub> (PGH<sub>2</sub>)





*dilate blood vessels and are secreted in seminal fluid from the prostate gland*

### E. Reactive Oxygen Species



*endoplasmic reticulum and mitochondria and peroxisomes*