



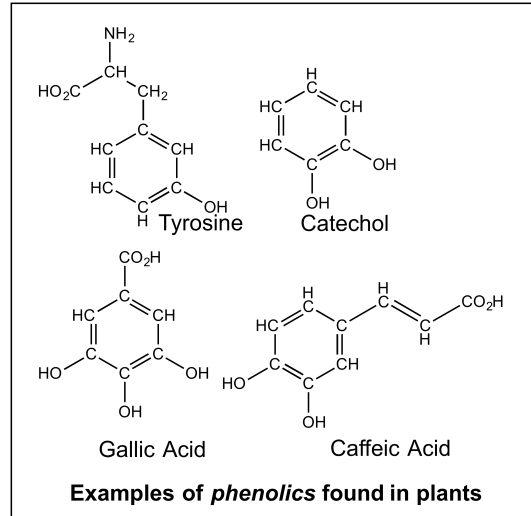
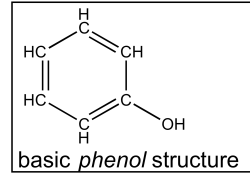
# Phenolic Compounds



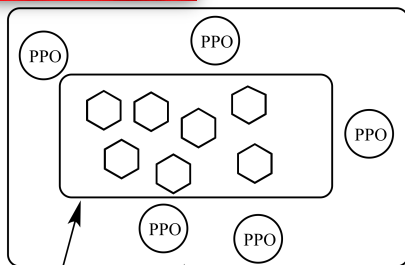
vacuole

plant cell

Responsible for plant development and structural integrity.



## PPO



vacuole

plant cell

(PPO) = the *enzyme*, polyphenol oxidase

⬡ = phenolic compound

(not drawn to scale)

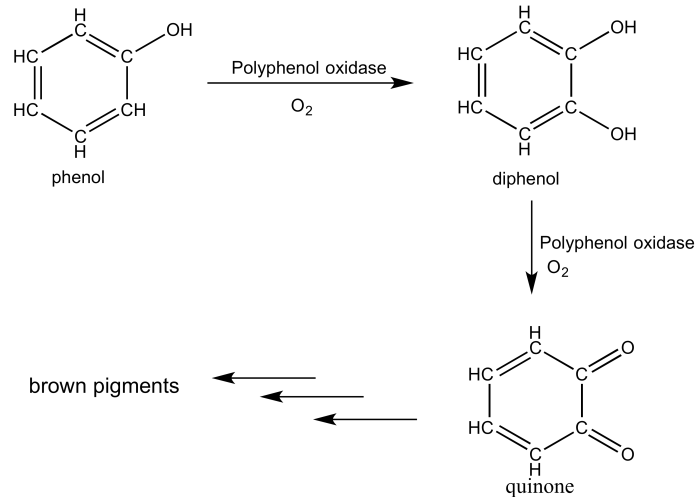
Damage to plant cells (fruits or vegetables) causes the release of the enzyme polyphenol oxidase (PPO)

– PPO can then interact and react with the phenolic compounds



# Enzymatic Browning of Fruits

## Polyphenol Oxidase **PPO**



## PPO Products

Brown products inhibit mold and plant pathogens and taste bitter to discourage further eating

Genetically Modified Organisms (GMO) apples – Arctic Apple, have the 8 different PPO genes silenced to limit browning during shipping (bruising slight cuts).

**Conventional  
Apple Variety**



**Arctic™  
Apple Variety**