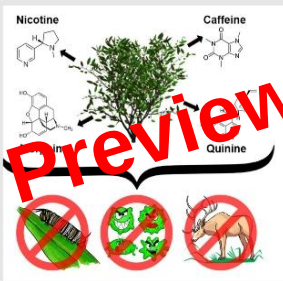
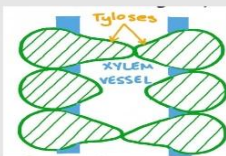
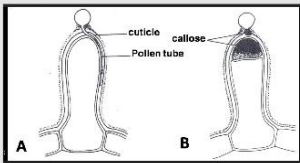


Plant Defences

Physical defenses

Callose:

- first physical defense line of plants as protection from environmental stress. callose is synthesised by callose synthase located on the cell membrane. callose is a polysaccharide.
- its role is to restrict pathogen spread and strengthen cell walls. callose is a polysaccharide located between plasma membrane & cell wall = sites where pathogens attack.
- Physical barrier slows pathogen invasion and restricts their movement between cells.



Tylose:

- In xylem vessels, callose can contribute to tylose formation, which blocks the xylem and prevents pathogen spread through the plant's vascular system.
- Formed by parenchyma cells creating a barrier.
- can be induced by biotic stress like pathogen infection to slow / prevent pathogen movement in the xylem.

Chemical defenses: - TOXINS

Alkaloids:

- Nitrogen-containing compounds taste bitter.
- Toxic to insects and fungi.
- Examples: caffeine, nicotine, morphine.

Tannins:

- Phenolic compounds are bitter and can bind to digestive enzymes in herbivores.
- Inhibiting their ability to digest food.

Terpenoids:

- compounds include essential oils that can be toxic to insects & fungi.
- Examples: Pyrethrin in chrysanthemums.

Defense against herbivores:

Thorns & spines:

Plants like roses & cacti use sharp protective structures like thorns and spines to deter herbivores.

Trichomes:

- small, hair-like structures.
- can make it hard for herbivores to reach the plant's edible parts / even cut them.

Waxy cuticle:

- waxy outer layer on leaves.
- makes them slippery and unpleasant to eat.

