

LECTURE 2. Digestive glands:

a. **Salivary glands:** In Cockroach a pair of labial glands acts as salivary gland where the salivary ducts open into salivarium. In caterpillars mandibular glands are modified to secrete saliva, where the salivary glands are modified for silk production.

Functions of saliva:

1. To moisten and to dissolve food
2. To lubricate mouthparts
3. To add flavour to gustatory receptors
4. In cockroach the saliva contains amylase for the digestion of starch.
5. In honey bee saliva contains invertase for sucrose digestion
6. In Jassid saliva contains lipase and protease for lipids and protein digestion. Jassid saliva also contains toxins which produces tissue necrosis and phytotoxemia on the plant parts.
7. In plant bug saliva contains pectinase which helps in stylet penetration and extra intestinal digestion.
8. In mosquito, saliva contains anticoagulin which prevents blood clotting.
9. In gall producing midges saliva contains Indole Acetic Acid (IAA).
10. In disease transmitting ectors the saliva paves way for the entry of pathogens.

b. **Hepatic caecae and midgut epithelial cells:** It secretes most of the digestive juices.

Two types of cells were involved in the enzyme secretion.

Holocrine : Epithelial cells disintegrate in the process of enzyme secretion.

Merocrine : Enzyme secretion occurs without cell break down.

C. Microbes in digestion: In the insect body few cells were housing symbiotic microorganisms called as mycetocyte. These mycetocytes aggregate to form an organ called mycetome.

Absorption: In many insects absorption of nutrients occurs through microvilli of midgut epithelial cells by diffusion. Absorption of water and ions occur through rectum. In cockroach lipid absorption occurs through crop. In termites and scarabaeids (White grubs) absorption occurs through ileum. In solid feeders, resorption of water from the faeces occurs in the rectum and the faeces is expelled as pellets. In sap feeders (liquid feeders) the faeces is liquid like. The liquid faeces of homopteran bugs (aphids, mealy bugs, Scales and psyllids) with soluble sugars and amino acids is known as honey dew, which attracts ants for feeding.

Sources

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