ECDYSIS OF INSECT

Ecdysis

- **Ecdysis or Molting** is a very common phenomenon in Insects. Due to the presence of hard exoskeleton the body growth is restricted.
- So, in odor to permit further body growth of the animal the old skeleton is castoff & a new exoskeleton develops in that place.
- So, ecdysis is an essential process in all the insect.It is known that ecdysis takes place only along predator minded exovial lines on the body .
- Ecdysis is a regular phenomenon in all the insects & it continue untill the animal become sexually mature with the exception of collembolla and Diplurea, where ecdysis is takes place through out the life. The time required between two moulting or ecdysis is called inster or intermediate time.

- According to the Imms (1957)the number and duration of each inster varies from species to species & with relation to the type of food, climatic factors &host etc.

Ecdysis can be distinguse by three important processes----

1. Splitting and sheding of old cuticles.
2. Expansion of the body &new cuticle.
3. Darkening and hardening of new cutical.

Stages involved in Ecdysis or moulting:

There are three stages of ecdysis. These are….

1. **Proecdysis**
2. **Ecdysis proper**
3. **Post ecdysis**

Proecdysis

- This is the initial preparative stage in which the body completely stops the normal activities and the animal takes a suitable shelter, even the slightest moment of the body can be observed.

  Histologycally the beginning of the proecdysis is worked by a significant increase in cellsize(epidermis),this is due to the formation of new epidermal glands.This glands secret a fluid known as moulting fluid which is used for the digestion of old cutical.

Ecdysis proper

- There are two important phenomenon in ecdysis proper.

1. Passive phase
2. Active phase

Passive phase:

It is known that splitting of old cuticle take place along some predetermined lines mainly on the dorsal side of the body (Snodgrass, 1949).this line known as ecdysal lines.

In some insects the splitting of old cuticle takes place with the help of a special organs known as ptilinum, situated at the head region(*Cyclorrhorous sp.*)

Active phase:

During this phase the animals actively crawls out of the old exoskeleton. Time require various form a second to half an hour in different groups of insects and it require huge amount of energy .

Blirs (1953)has proved that O_2 requirement of the body during the active phase is significantly higher than the normal stages.

3.Post ecdysal changes

A lot of changes take place in the new cuticle after the moulting or ecdysis is completed. This include expansion hardening &darkening of the cuticle. The cuticle of a newly molted insect is very soft and colorless except in some specialize regions of the body. The hardening &darkening takes place gradually and exception in an intermediate process.

A most important tanning agent is tyrosine which is produced &secreted from in large amount **hymolymph.**

Control of ecdysis

The entire process of ecdysis is controlled by a complicated neuroendocrine system. These is a moulting hormone known as **Ecdyson** secreted from prothorasic gland (insect)& Y gland (in case of crustacean)situated at the base of eye.

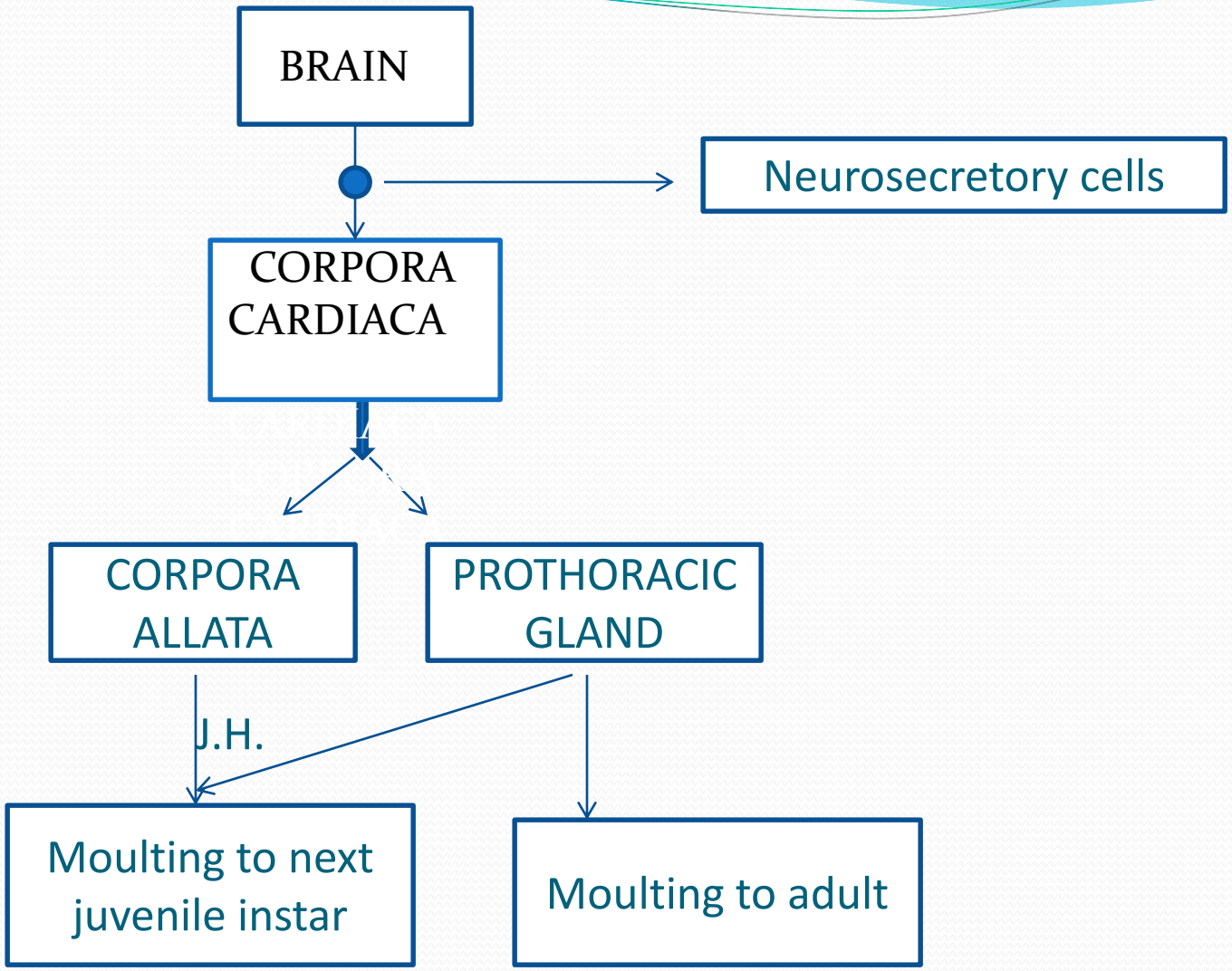
The empirical fourmula of ecdyson is C27 H44O6 & the molecular weight is 464 Dalto (Carlson 1963).Carlson 1963 was able to isolate two components from ecdyson known as α- ecdyson & β- ecdyson.

Proparties of ecdyson:

It is non specific

Mode of secretion:

The neurosecretory cells called pars intercerebralis situated in the brain secret a hormone known as **activated hormone(AH)**.This activating hormone goes to **corpora cardiaca** & then to **corpora alata.** which produce a hormon called **juvenile hormone.** This two process are interdependent since the **corpora cardiaca** regulate the activity of **prothorasic gland.**


BRAIN
Neurosecretory cells
CORPORA CARDIACA
CORPORA ALLATA
PROTHORACIC GLAND
J.H.
Moulting to next juvenile instar
Moulting to adult

THE END