METAMORPHOSIS

By,

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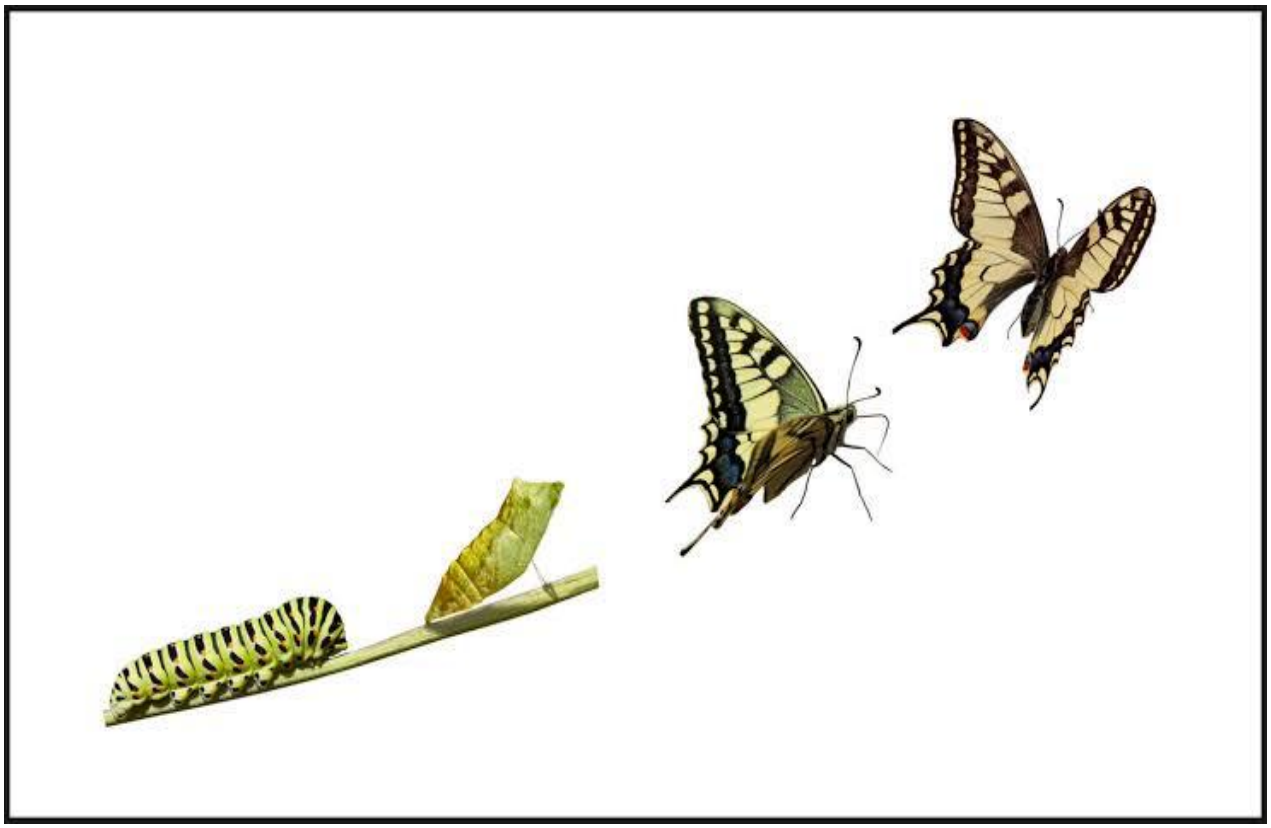

❒ HORMONAL CONTROL OF METAMORPHOSIS :-

❖ Introduction ;-

It is well established that Metamorphosis or the post embryonic growth of insects are controlled and regulated by neurosecretions and hormones . Certain nerve cells are modified to secrete hormones . These nerve cells are called neurosecretory cells and their secretions are called neurosecretions . The neurosecretions are temporally stored in special structures called ***corpus cardiacum*** .

❖ Neurosecretions in Insects :-

The various hormones secreted by neurosecretory cells of the brain are as follows :

1. Brain hormone (BH) :

Brain hormone is secreted by the neurosecretory cells of the brain . Chemically it is a lipid . This hormone serves to activate the

corpora cardiaca , a component of the retro-cerebral complex of the stomatogastric nervous system .

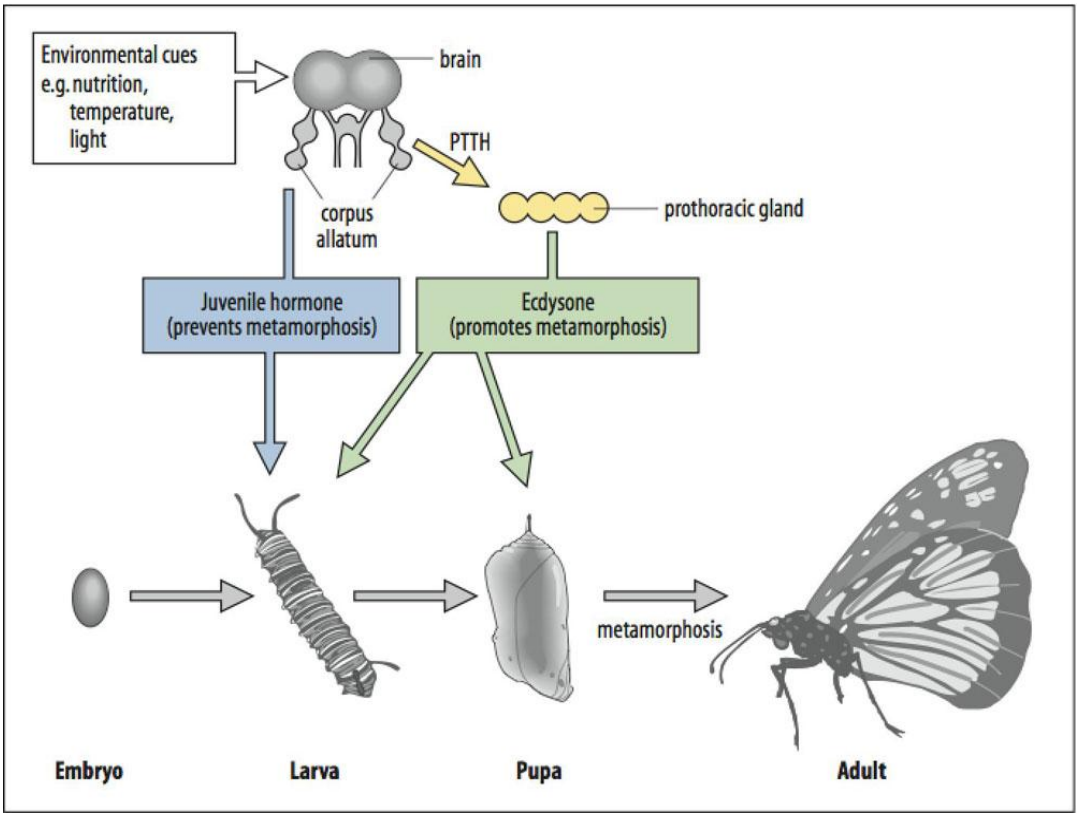

Fig . Role of hormones in Insect Metamorphosis

2. Prothoracicotropic hormone (PTTH) :

This hormone is secreted by the corpora cardiaca , which in turn stimulates the ***prothoracic glands .***

3. Prothoracic gland hormone (PGH) :

This hormone is secreted by the paired , bilateral sheet of cells in the thorax ,

constituting the prothoracic glands . Chemically it is ***ecdysone*** . This hormone is known to trigger moulting as it acts on the tissues to promote all of the changes characterizing a moult .

4. Juvenile hormone (JH) :

This hormone is secreted by another component of the retrocerebral complex , the ***corpora allata*** . Chemically it is an unsaponifiable , non-sterolic lipid . This hormone regulates morphogenesis and so promotes metamorphosis , that is , development of the larvae into adult through pupal stage .

❖ Conclusion :-

During metamorphosis , the adult character develop in the form of buds called imaginal discs . They are the future organs . The imaginal discs remain folded in the pupa . They increase in size and differentiate into adult organs .Thus , hormonal control of metamorphosis can be summarized as follows :

a) The brain secretes a hormone called brain hormone . It stimulates an endocrine gland called ***prothoracic gland*** .

b) The prothoracic gland secretes a hormone called ***ecdyson*** . The ***ecdyson*** induces moulting , growth & differentiation . This hormone converts the larvae into the adult .

c) ***Corpora allata*** an endocrine gland attached to the brain secretes another hormone called ***Juvenile hormone*** . It keeps the larva in the larval stage . As long as it remains in the body , the larva cannot become an adult . When this hormone decreases , the larva becomes an adult .

Thank You