

Hormonal Control of Behaviour

A hormone is a chemical substance secreted by specific endocrine gland of the body and transported by the blood stream, producing a specific effect on some other org. in the body. A number of hormones like MSH, ACTH, TSH, FSH, LH, vasopressin and Oxytocin etc. affect the behaviour of the organism. These hormones are of peptide nature, they show their effect in sexual behaviour, maternal behaviour, aggressive behaviour, territorial activity and many other behavioural act. Hormones have important effect on the behaviour of both invertebrates and vertebrates.

① Sexual Behaviour

Beach (1976) divided female behaviour into following three phases

- (a) Attractivity
- (b) Proceptivity
- (c) Receptivity

The male copulatory behaviour is affected by ACTH and other related peptides - LH-RH released from the hypothalamus have direct effect on copulatory behaviour.

① Maternal Behaviour ◦ —

Estrogen and progesterone are essential in stimulating maternal nest building. During parturition, oxytocin level is high which affects behaviour of the mother. The maternal behaviour of the parturient rat is activated by estrogen and oxytocin within the brain.

② Aggressive Behaviour ◦ —

Aggressive behaviour is under the control of variety of hormones released by pituitary-gonadal system and pituitary-adrenal system. In monkeys a variation in the levels of both testosterone and adrenal hormones in dominance rank of individual males. In red billed weaver bird, LH from the pituitary gland play an important role in controlling the aggressive behaviour.

③ Territorial Marking ◦ —

Males and females of gerbils secrete pheromones for marking from their mid-ventral sebaceous gland. At this time gerbils show stereotyped behaviour pattern.

5) Wheel Running ◦ —

Wang (1923) reported association between hormones and wheel running activity in the non-pregnant female rat. They show a 4 day cycle of wheel running which is correlated with her oestrous cycle.

6) Hoarding ◦ —

Food hoarding by male Gerbils is increased by castration and decreased by injecting testosterone. This shows testosterone inhibits hoarding.

7) Persistence ◦ —

The persistence of animal is increased by testosterone particularly in young chicks in performing different tasks like searching, discrimination and open field-testing.

8) Play ◦ —

An ~~adult~~ rhesus monkey, normal males display much more active play than females. Male hormone is responsible for that.

① Avoidance behaviours and role of hormone in learning and memory

Rats give avoidance behaviour when injected with ectopic MSH or ACTH - these hormones also increase the resistance to the avoidance behaviour extinction.

The behaviour of learning and memory retention is affected by neurotransmitter like MSH and ACTH or neuromodulators released from neurons projecting from other parts of brain where pituitary does not play role.

Vasopressin maintains adaptive behaviours in organisms. In human beings learning and memory are influenced by the analog DDAVP (1-DESAMINO-B-D-arginine vasopressin)

A behavioural change in one animal that is created by hormone administration can, in turn, affect the behaviour of other animal in the group.