VPB 221: Veterinary Physiology - III (Endocrinology, Reproduction, Growth & Environmental Physiology) (3+1)

SYLLABUS

THEORY

Hormone cell interaction, sub-cellular mechanisms-metabolism of hormones-methods of study of endocrine system; Receptors- mechanism of regulation; Chemistry of hypothalamo -hypophyseal hormones, target organ, pineal, thyroid, thymus, pancreas, adrenal, prostaglandins, hormones of calcium metabolism, disorders, rennin-angiotensin system, atrial natriuretic factors, erythropoietin, GI hormones, pheromones.

Genetic & endocrine control of gonadal development modification of gonadotrophin release, ovarian functions, follicular development dynamics, endocrine and receptor profiles, sexual receptivity, ovarian cycle, post partum ovarian activity, ovum transport, capacitation, fertilization, reproductive cycles in farm animals- hormones present in the biological fluids during pregnancy and their uses for the diagnosis of pregnancy - maternal foetal placental participation in pregnancy & parturition, immunology of gestation, preparturient endocrine events.

Spermatogenic cycle and wave- function of Sertoli cell-leydig cell- semen - composition-evaluation; Testosterone - function and regulation - cryptorchidism. Puberty - photoperiod- uses of androgens, progestogens, estrogens.

Functional and metabolic organization of mammary glands -structure and development; effect of estrogens and progesterone; hormonal control of mammary growth; lactogenesis and galctogenesis; biosynthesis of milk constituents- secretion of milk, mastitis and metabolism, prolactin and mammary tumours.-lactation cycle.

Biochemical and genetic determinants of growth, regulation of growth, metabolic and hormone interactions, factors affecting efficiency of growth and production in ruminants and single stomach animals. Growth in meat producing animals & birds, growth curves. Recombinant gene transfer technologies for growth manipulation- advantages and limitations. Protein deposition in animals and poultry.

Heat balance, heat tolerance, hypothermia, hyperthermia, thermo-regulation in farm animals, role of skin, responses of animals to heat and cold, fever, body temperature and hibernation. Temperature regulation in birds.

Climatology - various parameters and their importance. Effect of different environmental variables like temperature, humidity, light, radiation, altitude on animal performance. Acclimation, acclimatization -general adaptive syndrome. Clinical effect on endocrine - reproductive function, circadian rhythm.

Neurophysiology of behaviour, types of behaviour, communication, Learning and memory, behavioural plasticity.

PRACTICAL

Oestrus and phases of oestrous cycle in animals (vaginal mucus). Behavioural signs of oestrus. Bio-assay for trophic hormone. Demonstration of hormone estimation. Rectal palpation of reproductive organs. Sperm motility, sperm concentration - live and dead - abnormal sperm count. Measurement of growth in various species. Measuring surface area of animals. Health parameters of animals-body temperature, pulse, respiration and heart rate. Measurement of animal environmental conditions. Behaviour of animals-mating behaviour, milking behaviour, feeding behaviour (live/videographic/computer simulated demonstration)