



The Endocrine System

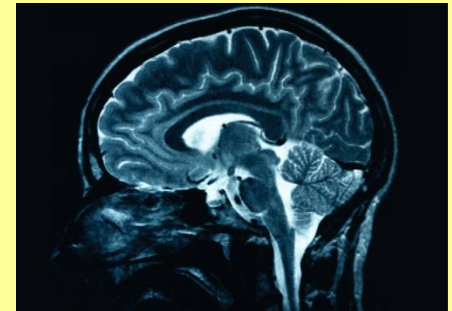
Unit 3 – Anatomy and Physiology
Lesson 9 – The Endocrine System

The Endocrine System

- A group of ductless glands that release hormones into the circulatory system
 - Greatly effects growth and development
 - Animal must have proper levels of all nutrients, especially minerals, for proper functioning.
 - These hormones produce gradual change, instead of immediate change like the nervous system.
 - Football player: nervous system directs him to run and catch pass, endocrine system causes rate of growth.
- Function is to work with nervous system in the internal control of the body.
 - This is accomplished by specific hormones secreted by specific glands.

Hormones

- Chemical substances that travel through the bloodstream and effect a gland or organ
 - They regulate many of the activities in the body by acting as messengers, relaying information.
 - Growth
 - Reproduction
 - Milk Production
 - Breathing Rate
 - Only needed in very minute amounts
 - 1/100,000,000 gram of oxytocin hormone will stimulate the almost immediate letdown on milk in female animals.
 - They are always in the blood in varying amounts.



Glands



- A cell or group of cells (tissue) that secretes fluids.
 - Hypothalamus is the portion of the brain that controls the pituitary gland, or master endocrine gland.
 - Also synthesizes antidiuretic hormone and oxytocin for uterus contraction during birth.

Principle Endocrine Glands

- Pituitary Gland: Master endocrine gland, linked to hypothalamus with nerves and vessels
 - Creates amino acid hormones
 - Controls adrenal gland, thyroid gland, ovaries, testis, mammary glands, stores hypothalamus hormones and secretes growth hormone.
- Thyroid gland
 - Creates amino acid hormones
 - Secretes thyroxin to stimulate growth and metabolism and secretes calcitonin
 - Parathyroid gland secretes amino acid hormones and parathyroid hormone
- Adrenal gland
 - Adrenal Medulla creates amino acid hormones and secretes epinephrine and norepinephrine
 - Adrenal Cortex creates steroid hormones and secretes glucocorticoid and aldosterone
- Reproductive glands
 - Ovary: secretes steroid hormones – female sex hormones
 - Testis: secretes steroid hormones – male sex hormones

Adrenaline

- Inner portion of adrenal gland secretes epinephrine (adrenaline) and norepinephrine.
 - Fight or flight response
- Hypothalamus relays impulses to nervous system, which stimulates adrenal glands to increase output of epinephrine (adrenaline) and norepinephrine.
 - These hormones increase heart rate, blood pressure, respiration rate
 - Increase efficiency of muscle contractions and blood sugar levels
 - Usually known as an “adrenaline rush.” Body prepares to face or flee the situation.