Endocrine system

Endocrine system overview

- Exocrine glands
  - Not part of endocrine system
  - Secrete their products into ducts that empty onto a surface or into a cavity
    - Ex: sweat glands, salivary glands
- Endocrine glands
  - Only glands part of endocrine system
  - Ductless
  - Secrete hormones directly into the blood

Mechanism of hormone action

- Endocrine glands secrete chemicals (hormones) into the blood.
- Hormones perform general functions of communication and control but a slower, longer-lasting type of control than that provided by nerve impulses.
- Cells acted on by hormones are called target cells found with target organs.

Non Steroid and steroid hormones

- Nonsteroid hormones (first messengers) bind to receptors on the target cell membrane (do not pass through membrane), triggering second messengers to affect the cell’s activities.
- Steroid hormones bind to receptors within the target cell nucleus and influence cell activity by acting on DNA (pass through membrane).

Regulation of hormone secretion

- Hormone secretion is controlled by homeostasis feedback
- Negative feedback - mechanisms that reverse the direction of a change in a physiological system.
  - Ex: pancreas releases insulin
- Positive feedback - (uncommon) mechanisms that amplify physiological changes.
  - Ex: labor contractions with the release of the hormone oxytocin.

Mechanisms of endocrine disease

- Hypersecretion - secretion of excess hormone
- Hyposecretion - insufficient hormone secretion
- Polyendocrine disorders - hyper and hyposecretion of more than one hormone
- Target cell insensitivity produces results similar to hyposecretion
- Endocrinologists have developed many different strategies for treatment (for example, surgery and hormone therapy).

Prostaglandins

- Prostaglandins (PGs) are powerful substances found in a wide variety of body tissues.