Objectives

- To outline the importance of the adrenal glands.
  > Relate location & role with sympathetic nervous system regulation.
  > Identify key hormones produced.
  > Understand relationship of regions of the adrenal glands and their respective associated hormones.
  > To relate how stress influences adrenal function.
- To understand that there are other organs that act as endocrine glands though not always glandular and classified as part of the endocrine system.

The role of the adrenal glands

Controlled by the nervous system.
Involved with the sympathetic nervous system response of fight or flight.
Responds to stress.
Cortex region also involved with the control of glucose metabolism.

Adrenal Medulla

Epinephrine a.k.a. adrenaline & norepinephrine
Increases level of sugar and fatty acids in blood.
Increases metabolic rate.
Increases heart rate and contractions of the heart.
Constricts blood vessels

Adrenal Cortex

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Effect</th>
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</thead>
<tbody>
<tr>
<td>Aldosterone</td>
<td>Increases reabsorption of salt in kidneys</td>
</tr>
<tr>
<td>Testosterone</td>
<td>Causes masculinization of body features.</td>
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</tbody>
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Types of Corticoids Produced in Adrenal Cortex

I. Mineralocorticoids – Aldosterone
   essential to regulation of electrolyte concentrations of extracellular fluids.

II. Glucocorticoids – Cortisol
    released in response to stress through the action of ACTH

III. Gonadocorticoids – Testosterone
    mostly weak androgens, which are converted to testosterone and estrogens in the tissue cells.
Regulation of stress response

CRH – Corticotrophin-releasing hormone
A neurohormone
Secreted by the hypothalamus.

ACTH – adrenocorticotrophic hormone
A peptide hormone
Secreted by ant. Pituitary
This hormone triggers the release of stress hormones.

Stress Hormones

Cortisol
Stress hormone
Released by adrenal glands
Acts on liver
Stimulates metabolism
Converts glycogen → glucose
For more energy

* Negative feedback regulation

Diseases of the Adrenal Glands

I. Cushing Syndrome:
hypersecretion of glucocorticoid hormone in Adrenal Cortex

II. Addison Disease:
deficiency of adrenal cortex hormones
J.F.K had this
muscle weakness, reduced blood sugar, loss of appetite and weight loss.

III. Virilizing:
masculinization of women
tumor of adrenal cortex
hypersecretion of androgens.