Adrenal gland

Adrenal glands are paired pyramid – shaped endocrine glands, located superior to kidneys, hence called **'suprarenal'**.

Adrenal gland, also called suprarenal gland, either of two small triangular endocrine glands one of which is located above each kidney.

In humans each adrenal gland weighs about 5 grams (0.18 ounce) and measures about 30 mm (1.2 inches) wide, 50 mm (2 inches) long, and 10 mm (0.4 inch) thick.

The adrenal glands have a rich blood supply and experience one of the highest rates of blood flow in the body. They are served by several arteries branching off the aorta, including the suprarenal and renal arteries.

Adrenal gland is structurally and functionally divided into outer adrenal cortex and inner adrenal medulla.

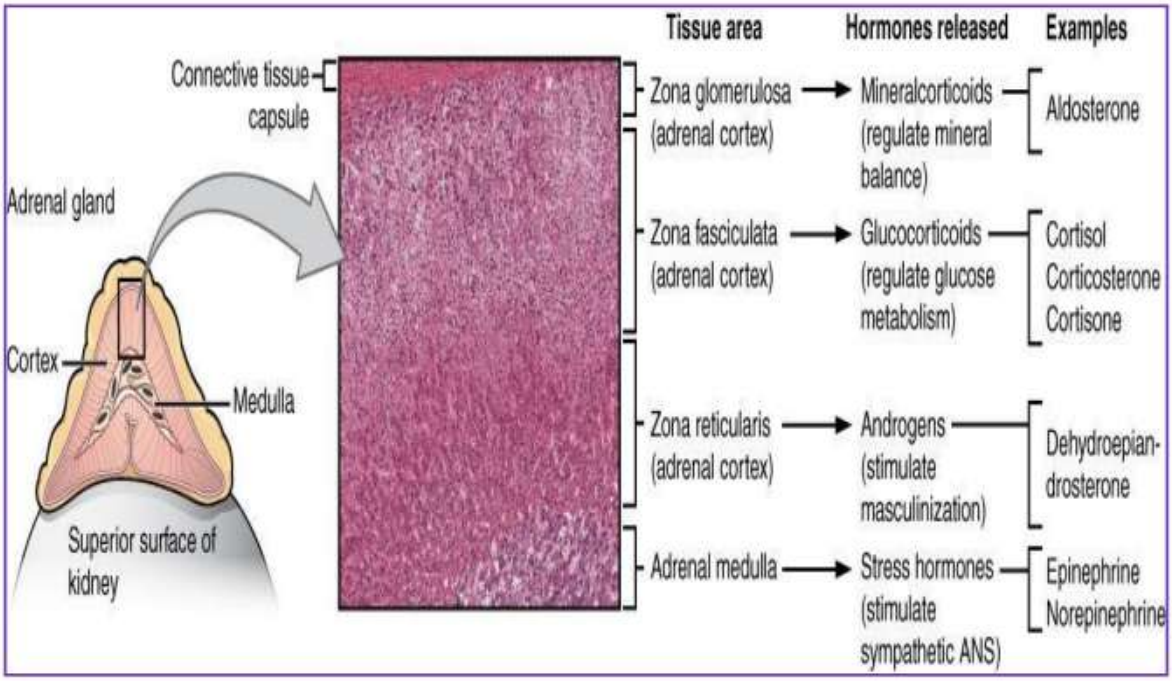

Fig: Adrenal glands

The adrenal gland consists of an outer cortex of glandular tissue and an inner medulla of nervous tissue. The cortex itself is divided into three zones: the **zona glomerulosa**, the **zona fasciculata**, and the **zona reticularis**. Each region secretes its own set of hormones.

The **adrenal cortex**, as a component of the hypothalamic-pituitary-adrenal (HPA) axis, secretes steroid hormones important for the regulation of the long-term stress response, blood pressure and blood volume, nutrient uptake and storage, fluid and electrolyte balance, and inflammation.

The HPA axis involves the stimulation of hormone release of adrenocorticotropic hormone (ACTH) from the pituitary by the hypothalamus. ACTH then stimulates the adrenal cortex to produce the hormone.

The **adrenal medulla** is neuroendocrine tissue composed of postganglionic sympathetic nervous system (SNS) neurons. It is really an extension of the autonomic nervous system, which regulates homeostasis in the body.

The sympathomedullary (SAM) pathway involves the stimulation of the medulla by impulses from the hypothalamus via neurons from the thoracic spinal cord. The medulla is stimulated to secrete the amine hormones epinephrine and norepinephrine.

One of the major functions of the adrenal gland is to respond to stress. Stress can be either physical or psychological or both. Physical stresses include exposing the body to injury, walking outside in cold and wet conditions without a coat on, or malnutrition.

Psychological stresses include the perception of a physical threat, a fight with a loved one, or just a bad day at school.

The body responds in different ways to short-term stress and long-term stress following a pattern known as the **general adaptation syndrome (GAS)**.

Adrenal gland is also known as 4s gland.

I. **Sugar metabolism**
II. **Salt retaining**
III. **Sex hormone**
IV. **Source of energy**