

An Overview of Adrenal Glands

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DESCRIPTION

The adrenal glands (also known as suprarenal glands) are endocrine glands that produce adrenaline and the steroids aldosterone and cortisol, among other substances. They're located just above the kidneys. An outer cortex that produces steroid hormones and an inner medulla makes up each gland. The zona glomerulosa, zona fasciculata, and zona reticularis are the three primary zones that make up the adrenal cortex.

Mineralocorticoids, glucocorticoids, and androgens are the three types of steroid hormones produced by the adrenal cortex. Mineralocorticoids (such as aldosterone), which are produced in the zona glomerulosa, aid in blood pressure and electrolyte balance management. In the zona fasciculata, the glucocorticoids cortisol and cortisone are produced, and their activities include metabolic regulation and immune system inhibition.

Structure

The adrenal glands are found in the retroperitoneum, above and slightly medial to the kidneys, on both sides of the body. The right adrenal gland is pyramidal in shape in humans, while the left is semilunar or crescent shaped and slightly larger. The adrenal glands have a breadth of 3 cm, a length of 5.0 cm, and a thickness of up to 1.0 cm. In an adult person, their aggregate weight is between 7 and 10 grams. The glands have a yellowish color to them. A fatty capsule surrounds the adrenal glands, which are located within the renal fascia, which also covers the kidneys [1]. The glands and kidneys are separated by a thin connective tissue septum (wall).

Adrenal cortex

The adrenal cortex is the largest and outermost component of the adrenal gland. The zona glomerulosa, zona fasciculata, and zona reticularis are the three distinct zones. Each zone is in charge of manufacturing different hormones. The adrenal cortex is the adrenal glands outermost layer. Three layers; referred to as "zones," exist within the cortex. Each layer has a distinct look when seen under a microscope, and each serves a distinctive

purpose [2]. The adrenal cortex manufactures hormones such as aldosterone, cortisol, and androgens.

Zona glomerulosa

The zona glomerulosa is the adrenal cortex's outermost zone. It is just beneath the gland's fibrous capsule. The cells in this layer form oval groups and are separated from the gland's fibrous capsule by thin strands of connective tissue. They have large capillaries. By the action of the enzyme aldosterone synthase, this layer is the primary site for the creation of aldosterone, a mineralocorticoid [3]. Aldosterone is essential for the long-term regulation of blood pressure.

Zona fasciculata

Between the zona glomerulosa and zona reticularis is the zona fasciculata. This layer's cells are in charge of manufacturing glucocorticoids like cortisol. It is the most massive of the three layers, accounting for roughly 80% of the cortex's volume. Cells in the zona fasciculata are organized in radially orientated columns toward the medulla [4]. Multiple lipid droplets, numerous mitochondria, and a complex smooth endoplasmic reticulum are found in cells.

Function

The adrenal gland produces a variety of hormones, which are metabolized by enzymes inside the gland or elsewhere in the body. Hormones play an important role in a variety of biological processes [5].

CONCLUSION

Androgens are produced in the zona reticularis, the cortex's innermost layer, and are transformed to fully functional sex hormones in the gonads and other target organs. Steroidogenesis is the process of producing steroid hormones in cortical cells, and it entails a multitude of reactions and processes. Catecholamine's are produced in the medulla and are responsible for producing a quick response throughout the body in stressful situations. The adrenal gland is involved in a number

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of endocrine illnesses. Cushing's syndrome is caused by excessive cortisol production, whereas Addison's disease is caused by insufficient cortisol production. Congenital adrenal hyperplasia is a hereditary illness caused by endocrine regulatory system dysfunction.

REFERENCES

1. Kaku K, Kiyosue A, Inoue S, Ueda N, Tokudome T, Yang J, et al. Efficacy and safety of dapagliflozin monotherapy in Japanese patients with type 2 diabetes inadequately controlled by diet and exercise. *Diabetes Obes Metab.* 2014;16(11):1102-1110.
2. Ji L, Ma J, Li H, Mansfield TA, Tjoen CL, Iqbal N, et al. Dapagliflozin as monotherapy in drug-naive Asian patients with type 2 diabetes mellitus: a randomized, blinded, prospective phase III study. *Clin Ther* 2014;36(1):84.e9-100.e9.
3. Ferrannini E, Ramos SJ, Salsali A, Tang W, List JF. Dapagliflozin monotherapy in type 2 diabetic patients with inadequate glycemic control by diet and exercise: a randomized, double-blind, placebo-controlled, phase 3 trial. *Diabetes Care.* 2010;33(10):2217-2224.
4. Kaku K, Inoue S, Matsuoka O, Kiyosue A, Azuma H, Hayashi N, et al. Efficacy and safety of dapagliflozin as a monotherapy for type 2 diabetes mellitus in Japanese patients with inadequate glycaemic control: a phase II multicentre, randomized, double-blind, placebo-controlled trial. *Diabetes Obes Metab.* 2013;15(5):432-440.
5. List JF, Woo V, Morales E. Sodium-glucose cotransport inhibition with dapagliflozin in type 2 diabetes. *Diabetes Care.* 2009;32(4):650-657.