Chapter 13

Endocrine System

The Endocrines

The endocrine system has ductless glands. They rely on the blood vessels and lymph vessels.

The secretions of the endocrine system are called hormones.

The secretion of hormones is controlled by a feedback mechanism.

The amount of the hormone in the blood stream regulates the amount being released.

The loop helps maintain the proper amount.

Pituitary Gland

It is a small organ that has been called the "orchestra leader" because it controls all the other glands.

Structure

Lies protected within the sphenoid bone

The steam of the pituitary glands connects to the hypothalamus of the brain.

It is actually made up of two separate glands with different embryonic organs and functions.

Anterior lobe/Anterior pituitary gland

Develops as an upgrowth from the pharynx

Posterior lobe/ Posterior pituitary gland

Develops as a downward extension of the brain

Thyroid

Paired bilateral glands located near the trachea below the larynx

The hormone secreted by the thyroid is controlled by the anterior pituitary gland.

Iodine is the essential element of the thyroid hormone.

Most disorders of the thyroid are caused by overproduction or underproduction of the thyroid hormone.

Parathyroid Glands

Small, smooth, shiny, round glands

There are usually two on each side in close proximity to the thyroid gland.

Adrenal Glands

Small glands located close to the kidney

Structure

Made up of two parts the cortex (outer portion) and medulla

Pineal Gland

Small, firm, oval body located near the base of the brain

Pancreas

Specialized cells of the pancreas are called Islands of Langerhans which secrete insulin, glucagons, and pancreatic polypeptide (PP)

Gonads

As endocrine glands, the ovaries and testes produce hormones important to the functioning of the reproductive system. These glands become active during puberty under the influence of the anterior pituitary lobe and produce secondary sex characteristics and reproductive behavior

Name	ABBR	Location Produced	Function
Somatropin	GH	Anterior Lobe of Pituitary	Promotes bodily growth of both bony and soft tissues
Thyrotropic (thyroid stimulating)H	TSH	Anterior Lobe of Pituitary	Influences the thyroid gland and causes secretion of the thyroid hormones
Follicle-stimulating Hormone	FSH	Anterior Lobe of Pituitary	Females-Stimulates growth of mature graafin follicles and the secretion of estrogen Males- the development of the seminiferous tubules and sperm cells
Luteinizing Hormone	LH	Anterior Lobe of Pituitary	Females-stimulates the formation of the corpus luteum and secretion of estrogen and progesterone
Interstitial cell-stimulating Hormone	ICSH	Anterior Lobe of Pituitary	Males - stimulates development and secretion of testosterone in the interstitial cells of the testes
Prolactin		Anterior Lobe of Pituitary	Responsible for mammary gland development during pregnancy
Adrenocorticotropic Hormone	ACTH	Anterior Lobe of Pituitary	Influences growth of the adrenal glands Appears to have a relationship to skin pigmentation
Melanocyte-stimulating Hormone	MSH	Anterior Lobe of Pituitary	Stimulates formation of melanin pigment in the skin and hair
Antidiuretic Hormones vasopressin	ADH	Posterior Lobe of Pituitary	Limits the development of large volumes of urine by stimulating water reabsorption by the distal and

			collecting tubules of the kidneys
Oxytocin		Posterior Lobe of Pituitary	Stimulates both the let down of milk into the mammary ducts and contraction of the pregnant uterus during parturition
Thyroxine (T4) and Triiodothyronine (T3) together called thyroid Hormone	T4 and T3	Thyroid	This hormone is high in iodine and vital for growth and metabolism.
Calcitonin		Thyroid	Produces a decrease of the calcium concentration in the blood
Parathyroid Hormone	PTH	Parathyroid Glands	Regulates the calcium and phosphorus content in the blood and bones. It increases blood calcium.
Mineralocorticoids		Adrenal (Outer)	Concerned with the regulation of sodium and potassium, which maintains electrolyte and water balance
Glucocorticoids		Adrenal (Outer)	Secreted mainly by the middle zone of the outer cortex. Including cortisol (hydrocortisone) and corticosterone; general effect is on metabolism, of carbohydrates, fats, and proteins, resistance to stress, antibody formation, lymphatic functioning, and recovery from inflammation and injury.
ex Hormones		Adrenal	These are produced not only by the adrenals but also by the ovaries and

			testes
Epinephrine (adrenaline)		Adrenal Medulla	Aids the body in meeting stressful situations such as defense, flight, attack, or pursuit by stimulating the sympathetic nervous system
Norepinephrine (noradrenaline)		Adrenal Medulla	Aids with coping stress, increases heartbeat, blood pressure, blood glucose level, and blood clotting rate
Melatonin		Pineal Gland	Believed to inhibit ovarian function and secretion of the pituitary luteinizing hormone
Insulin		Pancreas	Necessary for the use and storage of carbohydrates and acts to decrease blood glucose levels
Glucagon			Acts to incases the blood glucose levels
Pancreatic polypeptide	PP	Pancreas	Produces glucagons and gastric juices and has been identified as having additional functions in digestion and metabolism
Estrogenic hormones (estadiol, estrone)		Ovaries	Promotes secondary sex development and estrus after puberty
Testosterone		Testes	Promotes secondary sex development after puberty