

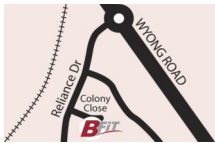


12th Edition

## The Endocrine System

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### Unit 2

5 Colony Close

Tuggerah Business Park

NSW 2259

T: 02 4353 0310

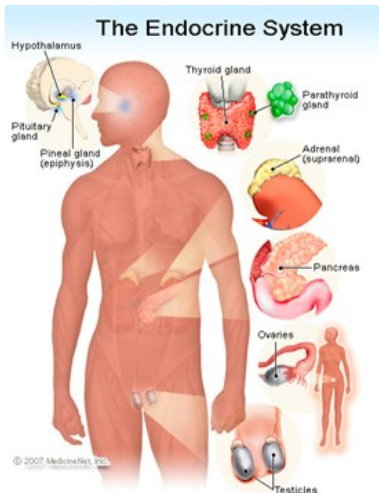
F: 02 4353 0315

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The endocrine system is made up of glands that produce and secrete hormones- chemical substances produced in the body that regulate the activity of cells or organs. These hormones regulate mood, growth and development, tissue function, metabolism (the physical and chemical processes of the body), and sexual development & function. The hormones are released into the bloodstream and may affect one or several organs throughout the body. Hormones act as chemical messengers created by the body. They transfer information from one set of cells to another to coordinate the functions of different parts of the body.

The major glands of the endocrine system are the hypothalamus, pituitary, thyroid, parathyroids, thymus, adrenals, pineal body, and the reproductive organs (ovaries and testes). The pancreas is also a part of this system; it has a role in hormone production as well as in digestion.



**Hypothalamus-** The hypothalamus is located in the lower central part of the brain. This part of

the brain is important in regulation of satiety, metabolism, and body temperature. In addition, it secretes hormones that stimulate or suppress the release of hormones in the pituitary gland. Many of these hormones are releasing hormones, which are secreted into an artery (the hypophyseal portal system) that carries them directly to the pituitary gland. In the pituitary gland, these releasing hormones signal secretion of stimulating hormones. The hypothalamus also secretes a hormone called somatostatin, which causes the pituitary gland to stop the release of growth hormone.

**Pituitary Gland-** The pituitary gland is located at the base of the brain beneath the hypothalamus and is no larger than a pea. It is often considered the most important part of the endocrine system because it produces hormones that control many functions of other endocrine glands.

**Pineal Body-** The pineal body, or pineal gland, is located in the middle of the brain. It secretes a hormone called melatonin, which may help regulate the wake-sleep cycle of the body.

**Thyroid Gland-** The thyroid gland is located in the lower front part of the neck. It produces thyroid hormones that regulate the body's metabolism. It also plays a role in bone growth and development of the brain and nervous system in children. The pituitary gland controls the release of thyroid hormones. Thyroid hormones also help maintain normal blood pressure, heart rate, digestion, muscle tone, and reproductive functions.

**Parathyroid Glands-** The parathyroid glands are two pairs of small glands embedded in the surface of the thyroid gland, one pair on each side. They release parathyroid hormone, which plays a role in regulating calcium levels in the blood and bone metabolism.

**Thymus-** The thymus is a gland needed early in life for normal immune function. It is situated in the upper part of the chest, behind the breastbone, and is made up of two lobes that join in front of the trachea. The thymus is very large just after a child is born and weighs its greatest when a child reaches puberty. Then its tissue is replaced by fat. The thymus gland secretes hormones called humoral factors. These hormones help to develop the lymphoid system, which is a system throughout the body that help it to reach a mature immune response in cells to protect them from invading bodies, like bacteria.

**Adrenal Glands-** The two adrenal glands are triangular-shaped glands located on top of each kidney. The adrenal glands are made up of two parts. The outer part is called the adrenal cortex, and the inner part is called the adrenal medulla. The outer part produces hormones called corticosteroids, which regulate the body's metabolism, the balance of salt and water in the body, the immune system, and sexual function. The inner part, or adrenal medulla, produces hormones called catecholamines (for example,

## Quote Of The Month:

“Exercise to stimulate, not to annihilate. The world wasn't formed in a day, and neither were we. Set small goals and build upon them.”

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adrenaline). These hormones help the body cope with physical and emotional stress by increasing the heart rate and blood pressure.

**.Pancreas**– The pancreas is an elongated organ located toward the back of the abdomen behind the stomach. The pancreas has digestive and hormonal functions. One part of the pancreas, the exocrine pancreas, secretes digestive enzymes. The other part of the pancreas, the endocrine pancreas, secretes hor-

mones called insulin and glucagon. These hormones regulate the level of glucose (sugar) in the blood.

**Reproductive Glands**- The reproductive glands are the main source of sex hormones. In males, the testes, located in the scrotum, secrete hormones called androgens; the most important of which is testosterone. These hormones affect many male characteristics (for example, sexual development, growth of facial hair and pubic hair) as well as sperm production. In females, the ovaries,

located on both sides of the uterus, produce estrogen and progesterone as well as eggs. These hormones control the development of female characteristics (for example, breast growth), and they are also involved in reproductive functions (for example, menstruation, pregnancy).

**In the chart below, take the opportunity to really 'lock in' what you now understand about the endocrine system and its role in your health.**

WHAT YOU'VE LEARNT			
GLAND	LOCATION	HORMONE(S)	ROLE
Hypothalamus			
Pituitary Gland			
Pineal Body			
Thyroid Gland			
Parathyroid Glands			
Thymus			
Adrenal Glands			
Pancreas			
Reproductive Glands			

It's clear to see that the endocrine system plays such an important role in physical and mental well-being. However, to many, it is a part of our physical selves that so many overlook when considering overall health and vitality. Take the opportunity to really study the information provided in this newsletter. Do you have any health issues that may be associated with a dis-functioning endocrine gland(s)? Are there any modifications that you could make to your overall lifestyle in order to positively stimulate these glands to aid your physical functioning?