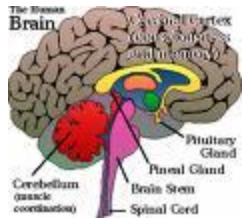


SOURCE: Pineal Gland



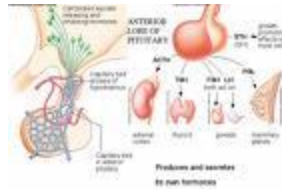
STIMULUS FOR RELEASE: Darkness or lack of bright sunlight.

EFFECTS ON TARGET TISSUES:

- *Have a calming or sedating effect..."makes you mellow" by encouraging the onset and depth of sleep.
- *Excess secretion causes some people to become depressed during winter months...a condition known as S.A.D.(Seasonal Affective Disorder)

MELATONIN

SOURCE: Anterior Pituitary Gland



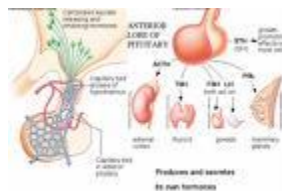
STIMULUS FOR RELEASE: Pregnancy and infant nursing

EFFECTS ON TARGET TISSUES:

- *Stimulates production of milk in breast but not the release or "let down" of milk during feeding.

PROLACTIN

SOURCE: Anterior Pituitary Gland



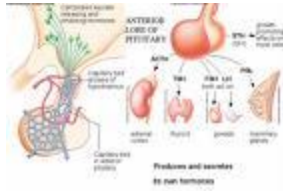
STIMULUS FOR RELEASE: -

EFFECTS ON THE TARGET TISSUES:

- *Stimulates growth of ovarian follicles containing eggs.

FOLLICLE STIMULATING HORMONE (FSH)

SOURCE: Anterior Pituitary Gland



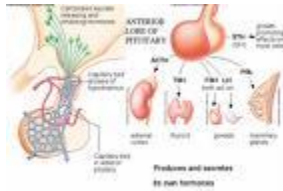
STIMULUS FOR RELEASE: -

EFFECTS ON TARGET TISSUES:

*Stimulates ovulation and formation of a corpus luteum

LUTEINIZING HORMONE (LH)

SOURCE: Anterior Pituitary Gland



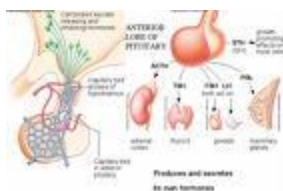
STIMULUS FOR RELEASE: -

EFFECTS ON TARGET TISSUES:

*Stimulates thyroid gland to release T_3 and T_4 .

THYROID STIMULATING HORMONE (TSH) OR (THYROTROPIN)

SOURCE: Anterior Pituitary Gland



STIMULUS FOR RELEASE: -

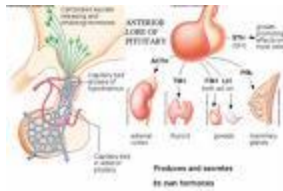
EFFECTS ON TARGET TISSUES:

*Increases anabolic metabolism (protein synthesis) and cartilage growth at epiphyseal plates (bone growth)

*Potentiates (enhances) the effects of T_3 and T_4 .

GROWTH HORMONE (GH)

SOURCE: Anterior Pituitary Gland



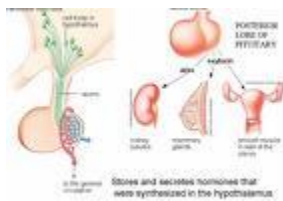
STIMULUS FOR RELEASE: Various sources of stress both physical and psychological

EFFECTS ON TARGET TISSUES:

*Stimulates adrenal cortex to release aldosterone and cortisol especially during prolonged stress.

ADRENOCORTICOTROPIC HORMONE (ACTH)

SOURCE: Posterior Pituitary Gland



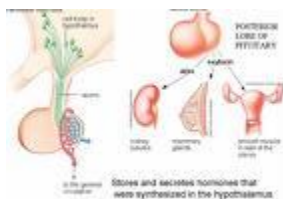
STIMULUS FOR RELEASE: high osmolality of body fluids or decreasing BP

EFFECTS ON TARGET TISSUES:

*Directly causes kidneys to reabsorb more water back into the blood and produce a smaller amount of more concentrated urine.
*Water retention leads to increased BP.

ANTIDIURETIC HORMONE (ADH)

SOURCE: Posterior Pituitary Gland



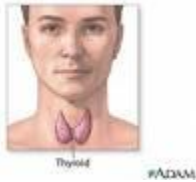
STIMULUS FOR RELEASE: Stretch of uterine cervix or infant nursing at breast.

EFFECTS ON TARGET TISSUES:

*Stimulates uterine contractions associated with childbirth
*Causes contraction of milk gland and the flow of milk "let down" during breast feeding.

OXYTOCIN

SOURCE: Thyroid Gland



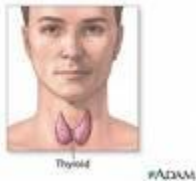
STIMULUS FOR RELEASE: Excessively high blood Ca^{++}

EFFECTS ON TARGET TISSUES:

- *Lowers blood Ca^{++} by stimulating osteoblast to absorb and kidneys to excrete Ca^{++} . "tones down calcium levels"
- *Is rarely used by the adult body to control blood Ca^{++} levels. Only used when Ca^{++} is excessively high.

CALCITONIN

SOURCE: Thyroid Gland



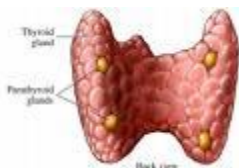
STIMULUS FOR RELEASE: TSH

EFFECTS ON TARGET TISSUES:

- *increase overall metabolism (especially protein synthesis) thereby increasing body temperature and energy consumption.
- *Enhances the effects of GH such as protein synthesis.

THYROID HORMONE (TH) T_3 & T_4

SOURCE: Parathyroid Gland



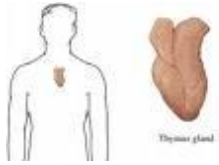
STIMULUS FOR RELEASE: Low blood calcium

EFFECTS ON TARGET TISSUES:

- *Increases blood Ca^{++} levels by (1) stimulates osteoclasts to release Ca^{++} from bone (2) stimulates kidneys to retain Ca^{++} in blood (3) stimulates absorption of Ca^{++} at small intestine
- *Blood calcium levels are normally adjusted up or down by adjusting the amount of PTH

PARATHYROID HORMONE (PTH)

SOURCE: Thymus



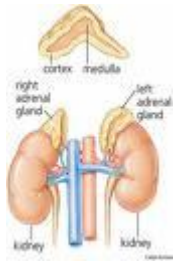
STIMULUS FOR RELEASE: -

EFFECTS ON TARGET TISSUES:

- *Influences development of lymphocytes involved in immunity. I
- *Is most active when we are young.

THYMOSIN

SOURCE: Adrenal Cortex



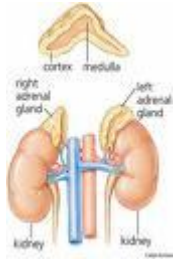
STIMULUS FOR RELEASE: Low blood Na^+ which usually corresponds with increased K^+ , Low BP. Stress may also stimulate release via ACTH.

EFFECTS ON TARGET TISSUES:

- *Retention(reabsorption) of Na^+ and increased excretion of K^+ (and H^+) at kidneys. Water follows Na^+ so water is conserved indirectly. Water retention leads to increased BP.
- *Levels are low in Addison's Disease
- *Levels are high in Cushing's Syndrome

ALDOSTERONE

SOURCE: Adrenal Cortex



STIMULUS FOR RELEASE: Stress or hypoglycemia causes the release of ACTH from anterior pituitary. This in turn stimulates the adrenal cortex to release cortisol and aldosterone.

EFFECTS ON TARGET TISSUES:

*Helps keep blood glucose up to its normal level between meals by (1) causing cells to make glucose from lipids and proteins (2) causing cells to burn more FA's and less glucose.

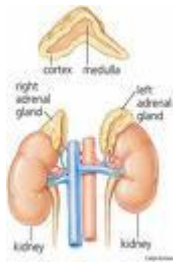
*Is anti-inflammatory. Depresses the normal functions of your immune system.

*Levels are low in Addison's Disease

*Levels are high in Cushing's Syndrome

CORTISOL (HYDROCORTISONE)

SOURCE: Adrenal Medulla



STIMULUS FOR RELEASE: Sympathetic nerve impulses due to stressful "fight or flight" situations

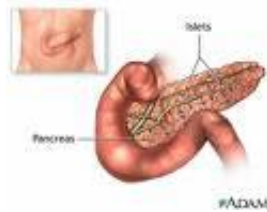
EFFECTS ON TARGET TISSUES:

*Same as general sympathetic stimulation (F/F) ...increased HR, increased vasoconstriction, increased BP, bronchodilation, etc.

*These effects are short lived(minutes)

EPINEPHRINE (ADRENALINE) & NOREPINEPHRINE (NE)

SOURCE: Pancreas



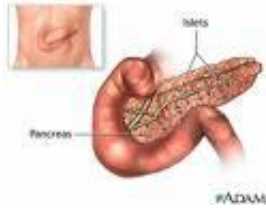
STIMULUS FOR RELEASE: Low blood glucose levels

EFFECTS ON TARGET TISSUES:

*increase blood glucose levels by stimulating glycogenolysis at liver thereby releasing glucose to the blood.

GLUCAGON

SOURCE: Pancreas



STIMULUS FOR RELEASE: High blood glucose levels

EFFECTS ON TARGET TISSUES:

- *Lowers blood glucose(BG) by facilitating the transport of glucose(and AA's) from blood into tissue cells, especially into skeletal muscle and fat.
- *Stimulates protein synthesis
- *Type II diabetes mellitus(most common type) results from target tissue receptors that do not respond to insulin.
- *Type I diabetes mellitus results from a pancreas that does not produce and/or release correct amounts of insulin.

INSULIN

SOURCE: Ovaries

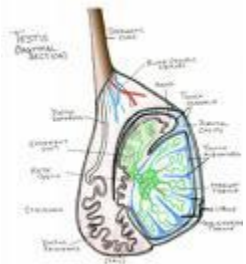


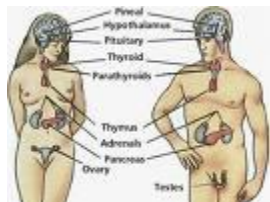
STIMULUS FOR RELEASE: Fluctuating levels for FSH and LH from anterior pituitary gland.

EFFECTS ON TARGET TISSUES:

- *Controls changes of the endometrium during the monthly uterine(menstrual) cycle

ESTROGEN & PROGESTERONE

<p>SOURCE: Testes</p>  <p>STIMULUS FOR RELEASE: Watching sports on TV, hunting, fishing, being around “babes”, and having a beer “with the guys”</p> <p>EFFECTS ON TARGET TISSUES: *Stimulates anabolic metabolism (protein synthesis), sperm production, growth of chest and facial hair, deep voice, etc. *Increased aggressiveness and “territorial” tendencies.</p>	<h1>TESTOSTERONE</h1>
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<p>TEST YOURSELF WITH THE FOLLOWING FLASH CARDS.</p> 	
<p>EFFECTS OF HORMONES:</p> <p>Stimulates contractions of the smooth muscles of uterus during and following childbirth.</p>	<p>HORMONE(S)</p> <h2>OXYTOCIN</h2>
<p>EFFECTS OF HORMONES:</p> <p>These (4) hormones stimulate protein synthesis of structural proteins.</p>	<p>HORMONE(S)</p> <h2>THYROID HORMONE INSULIN GROWTH HORMONE TESTOSTERONE</h2>

<p>EFFECTS OF HORMONES:</p> <p>Released in response to low blood calcium levels. Increased blood Ca⁺⁺ concentrations.</p>	<p>HORMONE(S)</p> <p>PARATHYROID HORMONE(PTH)</p>
<p>EFFECTS OF HORMONES:</p> <p>Indirectly stimulates growth of epiphyseal plates at joints causing bones to grow in length.</p>	<p>HORMONE(S)</p> <p>GROWTH HORMONE (GH)</p>
<p>EFFECTS OF HORMONES:</p> <p>Stimulates milk production but not the “let down” of milk in the female breast.</p>	<p>HORMONE(S)</p> <p>PROLACTIN</p>

<p>EFFECTS OF HORMONES:</p> <p>Stimulates maturation of ovarian follicles containing eggs.</p>	<p>HORMONE(S)</p> <p>FOLLICLE STIMULATING HORMONE(FSH)</p>
<p>EFFECTS OF HORMONES:</p> <p>Stimulates ovulation and formation of a corpus luteum.</p>	<p>HORMONE(S)</p> <p>LUTEINIZING HOROMONE(LH)</p>

<p>EFFECTS OF HORMONES:</p> <p>These (2) hormones regulate changes of the endometrial lining of the uterus during the monthly uterine cycle.</p>	<p>HORMONE(S)</p> <p>ESTROGEN & PROGESTERONE</p>
<p>EFFECTS OF HORMONES:</p> <p>These (4) hormones are released in response to a decrease in BP. (2) are fast acting for a short term response and (2) are slower acting for a long-term response.</p>	<p>HORMONE(S)</p> <p>ALDOSTERONE ANTIDIURETIC HORMONE(ADH) EPINPHRINE NOREPINEPHRINE</p>
<p>EFFECTS OF HORMONES:</p> <p>Released shortly after a meal to enable muscle and fat cells to absorb glucose from the blood.</p>	<p>HORMONE(S)</p> <p>INSULIN</p>
<p>EFFECTS OF HORMONES:</p> <p>This type of diabetes does not respond well to hormone therapy.</p>	<p>HORMONE(S)</p> <p>TYPE II DIABETES</p>
<p>EFFECTS OF HORMONES:</p> <p>A powerful anti-inflammatory agent from the adrenal cortex. High levels for this hormone as a result of stress depresses the immune system.</p>	<p>HORMONE(S)</p> <p>CORTISOL</p>

<p>EFFECTS OF HORMONES:</p> <p><i>Directly</i> promotes conservation of water by the kidneys.</p>	<p>HORMONE(S)</p> <p>ANTIDIURETIC HORMONE(ADH)</p>
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<p>EFFECTS OF HORMONES:</p> <p>Causes the kidneys to reabsorb sodium back into the blood. <i>Indirectly</i> causes kidneys to save water to the blood because water follows sodium.</p>	<p>HORMONE(S)</p> <p>ALDOSTERONE</p>
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<p>EFFECTS OF HORMONES:</p> <p>Causes glycogenolysis in the liver thereby dumping glucose into the blood.</p>	<p>HORMONE(S)</p> <p>GLUCAGON</p>
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<p>EFFECTS OF HORMONES:</p> <p>Stimulates the adrenal cortex to release its hormones(aldosterone and cortisol) during periods of prolonged stress.</p>	<p>HORMONE(S)</p> <p>ADRENOCORTICOTROPIC HORMONE(ACTH)</p>
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<p>EFFECTS OF HORMONES:</p> <p>These (2) hormones produce widespread short term effects essentially the same as those resulting from stimulation of sympathetic nerves.</p>	<p>HORMONE(S)</p> <p>EPINEPHRINE & NOREPINEPHRINE</p>
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<p>EFFECTS OF HORMONES:</p> <p>There (2) hormones cause the kidney to conserve water.</p>	<p>HORMONE(S)</p> <p>ANTIDIURETIC HORMONE & ALDOSTERONE</p>
<p>EFFECTS OF HORMONES:</p> <p>These (2) hormones try to prevent hypoglycemia by increasing blood sugar levels between meals or when meals are skipped.</p>	<p>HORMONE(S)</p> <p>GLUCAGON & CORTISOL</p>
<p>EFFECTS OF HORMONES:</p> <p>More of this hormone could lower circulating calcium and phosphorous levels but would only be used when Ca^{++} is excessively high.</p>	<p>HORMONE(S)</p> <p>CALCITONIN</p>
<p>EFFECTS OF HORMONES:</p> <p>This hormone stimulates sperm production in males and makes men occasionally behave with inappropriate aggressiveness.</p>	<p>HORMONE(S)</p> <p>TESTOSTERONE</p>

<p>EFFECTS OF HORMONES:</p> <p>Stimulates ejection of breast milk into ducts during feeding..."let down." This is not the same as milk production</p>	<p>HORMONE(S)</p> <p>OXYTOCIN</p>
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<p>EFFECTS OF HORMONES:</p> <p>This hormone influences development of lymphocytes that are essential for the healthy functioning of your immune system.</p>	<p>HORMONE(S)</p> <p>THYMOSIN</p>
<p>EFFECTS OF HORMONES:</p> <p>This hormone influences your sleeping/waking cycles and is produced mostly at night. It has a calming, soothing effect.</p>	<p>HORMONE(S)</p> <p>MELATONIN</p>
<p>EFFECTS OF HORMONES:</p> <p>This hormone targets the thyroid gland causing it to release T₃ and T₄.</p>	<p>HORMONE(S)</p> <p>THYROID STIMULATING HORMONE(TSH)</p>
<p>MISCELLANEOUS:</p> <ol style="list-style-type: none"> 1. Neurons “talk” to neurons or effectors by chemicals called NTs. The endocrine system “talks” to target tissues with chemicals called _____. 2. Is called the “master gland” because it releases more hormones than any other and affects many other glands. 	<p>ANSWER:</p> <ol style="list-style-type: none"> 1. Hormones 2. Anterior Pituitary Gland
<p>MISCELLANEOUS:</p> <ol style="list-style-type: none"> 1. Organ found adjacent to first part of the small intestine containing endocrine glands for control of BG levels. 2. Gland that is the source of hormones associated with fight or flight response. 	<p>ANSWER:</p> <ol style="list-style-type: none"> 1. Pancreas 2. Adrenal Medulla