

# Holistic Health

# MAKEOVER

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# TABLE OF CONTENTS

<b>HORMONES</b>	<b>3</b>
<b>THE ENDOCRINE SYSTEM</b>	<b>4</b>
<b>GLANDS</b>	<b>5</b>
<b>HYPOTHALAMUS</b>	<b>6</b>
<b>THYROID</b>	<b>7</b>
<b>ADRENALS</b>	<b>8</b>
<b>INSULIN</b>	<b>9</b>
<b>GLUCAGON</b>	<b>10</b>
<b>LEPTIN</b>	<b>10</b>
<b>GHRELIN</b>	<b>11</b>
<b>CORTISOL</b>	<b>12</b>
<b>ESTROGEN</b>	<b>12</b>
<b>TESTOSTERONE</b>	<b>12</b>
<b>PROGESTERONE</b>	<b>13</b>
<b>MENOPAUSE</b>	<b>13</b>
<b>POLYCYSTIC OVARIAN SYNDROME</b>	<b>14</b>
<b>METABOLIC SYNDROME</b>	<b>14</b>
<b>ESTROGEN DOMINANCE</b>	<b>14</b>
<b>HOW TO RECOGNIZE IMBALANCES</b>	<b>14</b>
<b>BALANCE</b>	<b>15</b>

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”

World Health Organization

## HORMONES

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**A regulatory substance produced in an organism and transported in tissue fluids such as blood or sap to stimulate specific cells or tissues into action.**

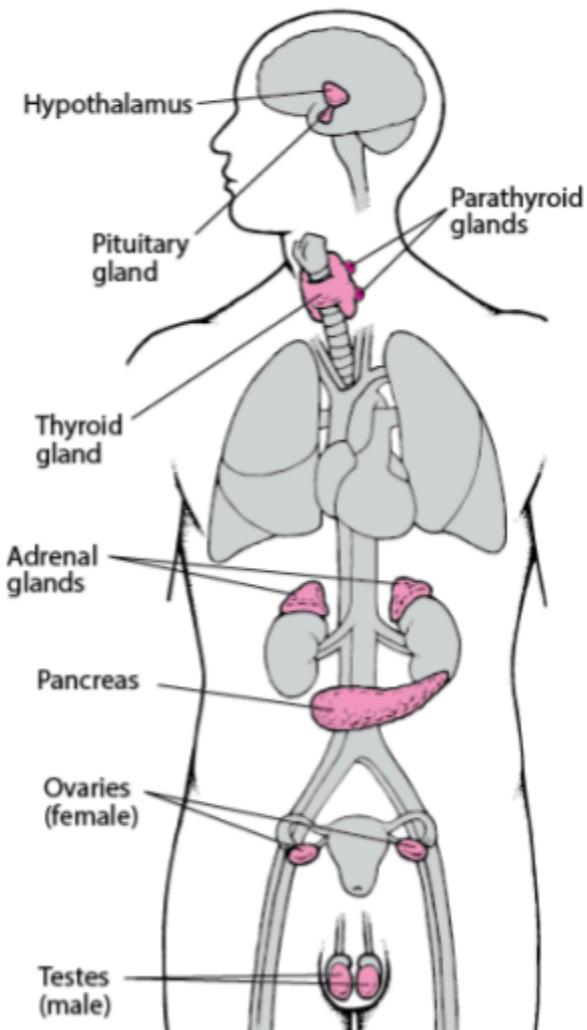
- Hormones are special chemical messengers in the body that are created in the endocrine glands.
- In response to a signal from the brain, hormones are secreted directly into the blood by the glands that produce and store them.
- These messengers control most major bodily functions, from simple basic needs like hunger to complex systems like reproduction, and even the emotions and mood.
- Hormones are STRONG! Even the tiniest amount secreted can make a huge impact on how your body functions so we must keep them in check!
- Biochemistry and hormones involved in fat burning versus fat storage, hunger signaling and blood sugar levels. Hormones are the drivers of this entire process!

## THE ENDOCRINE SYSTEM

The Endocrine System is the collection of glands that produce hormones that regulate metabolism, growth and development, tissue function, sexual function, reproduction, sleep, and mood and much more

# 9 Endocrine Glands

- **In the brain:** hypothalamus, pituitary, pineal
- **In the neck:** thyroid, parathyroid
- **Part of the digestive system:** pancreas
- **Above the kidneys:** adrenals
- **Reproductive:** ovaries, testes



# GLANDS

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## Hormone Producing Glands

- **Hypothalamus:** The hypothalamus is responsible for body temperature, hunger, moods and the release of hormones from other glands; and also controls thirst, sleep and sex drive.
- **Parathyroid:** This gland controls the amount of calcium in the body. **Thymus:** This gland plays a role in the function of the adaptive immune system and the maturity of the thymus, and produces T-cells.
- **Pancreas:** This gland produces the insulin that helps control blood sugar levels. **Thyroid:** The thyroid produces hormones associated with calorie burning and heart rate.
- **Adrenal:** Adrenal glands produce the hormones that control sex drive and cortisol, the stress hormone. **Pituitary:** Considered the "master control gland," the pituitary gland controls other glands and makes the hormones that trigger growth.
- **Pineal:** Also called the thalamus, this gland produces serotonin derivatives of melatonin, which affects sleep.
- **Ovaries:** Only in women, the ovaries secrete estrogen, testosterone and progesterone, the female sex hormones.
- **Testes:** Only in men, the testes produce the male sex hormone, testosterone, and produce sperm. These glands work together to create and manage the body's major hormones.

# HYPOTHALAMUS : The Master

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**Located in the centre of the brain the Hypothalamus is responsible for the cascade of hormone production and signalling of every other endocrine gland.**

**The hypothalamus is responsive to:**

- Stress • Light: light and length of daylight
- Smell: stimuli ~ pheromones
- Steroids: gonadal (reproductive)/ ancorticosteroids (adrenal)
- Neurally transmitted information (CNS) from the heart, the stomach, and the reproductive tract
- Autonomic inputs (Autonomic Nervous System)
- Stimuli ~ hunger hormones, blood pressure, insulin/blood sugars, pituitary hormones, inflammation, glucose etc.
- Invading microorganisms by increasing body temperature

**Hormones secreted by the Hypothalamus**

**Anti-Diuretic Hormones** – regulate water levels in the body, including blood volume and blood pressure

**Oxytocin** – controls some human behaviors and the reproductive system.

**9 Corticotropin-Releasing Hormone** – Response to physical and emotional stress, suppresses the appetite and stimulating anxiety.

**Gonadotropin-Releasing Hormone** – Stimulates the release of hormones connected to reproductive function, puberty and sexual maturation.

**Somatostatin** – Inhibits growth and thyroid-stimulating hormones.

**Growth Hormone-Releasing Hormone** – Controls growth and physical development in children as well as metabolism in adults.

**Thyrotropin-Releasing Hormone** – Stimulates production of the thyroid hormone, which in turn controls the cardiovascular system, brain development, muscle control, digestive health and metabolism.

# THYROID : The Regulator

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**Manufactures hormones responsible for EVERY metabolic process in the body**

## **HOW IT WORKS?**

The thyroid gland uses iodine from the foods you eat to make two main hormones: Triiodothyronine (T3) Thyroxine (T4). T3 and T4 travel in your bloodstream to reach almost every cell in the body. The hormones regulate the speed with which the cells/metabolism work. This affects the Heart, Brain development and function, Eyes, Skin and hair, Weight, Metabolism and Intestine function. It is important that T3 and T4 levels are neither too high nor too low.

### **Hyperthyroidism: too much T3 and T4 in your body**

Anxiety Irritability or moodiness Nervousness, hyperactivity Sweating or sensitivity to high temperatures, Hand trembling (shaking), Hair loss, Missed or light menstrual periods, rapid heart rate and diarrhea/weight loss

### **Hypothyroidism: too little T3 and T4 in your body**

Trouble sleeping, constipation/weight gain, Tiredness and fatigue Difficulty concentrating, Dry skin and hair, Depression, Sensitivity to cold temperature, Frequent and heavy periods, Joint and muscle pain

**Basal Body Temperature** – The most cost effective and reliable way to determine thyroid functionality is to assess the Basal Temperature in an individual. This method can effectively determine our Metabolic Rate as well as tracking ovulation/fertility. (BBT) is your lowest body temperature in a 24-hour period.

### **Factors that Improve Sensitivity to thyroid Hormones:**

Vitamin A, Exercise, Zinc

### **Factors that Contribute to proper production of Thyroid Hormones:**

Iodine, Tyrosine, Zinc, Vitamins E, B2, B3, B6, C and Antioxidants

# ADRENALS

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**Located above each kidney, these function as part of the nervous system, endocrine system and produce the same hormones as our reproductive glands.**

## **Symptoms of adrenal insufficiency**

- Crave salty foods • Insomnia • Lack of energy • Low blood pressure
- Low libido • Suffer from recurring infections • Fatigue • Chronic respiratory problems: asthma, allergies • Dizzy upon standing quickly
- Low in energy between 3-4 p.m. • Eyes sensitive to lights
- Perspiration - sweating hands & feet • Head, neck and/or shoulder tension • Menstrual irregularities/PMS • Hypoglycemia/Low blood sugar
- Irritability/Depression • Poor memory/learning • Central obesity • Skin disorders • Lowered immunity • Impaired fertility • Kidney disorders • Bone loss • Protein Wasting • Gastrointestinal disorders

## **The adrenal magic 8**

### **8 dietary and lifestyle factors for optimal function and happiness**

1. Sleep!!! In bed between 10-11 p.m. night
2. B Vitamins - the anti stress nutrient B5 (Pantothenic Acid) + B6
3. Tyrosine - this amino acid is a precursor to catecholamines: dopamine, norepinephrine, and adrenaline
4. Vitamin C - another anti-stress nutrient
5. Magnesium - the first nutrients lost when adrenals become fatigued - required for healthy functioning of our nervous system
6. Potassium - along with magnesium are key minerals needed to maintain blood sugar & kidney function
7. Sea Salt - yes! We NEED sodium and other trace minerals (96 to be exact) and the adrenals ❤ salt
8. Hydration - CLEAN water source -  $\frac{1}{2}$  our body weight in ounces daily

## INSULIN

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- A hormone made by the pancreas that allows your body to use sugar (glucose) from carbohydrates in the food we eat for energy or to store for future use.
- helps keeps your blood sugar level from getting too high (hyperglycemia) or too low (hypoglycemia)
- Promotes inflammatory responses
- Promotes lipogenesis (fat deposition) and inhibits lipolysis (fat burning)
- Exerts activities typically associated with growth factors. Insulin is a member of a family of structurally and functionally similar molecules that includes the insulin-like growth factors (IGF-1 and IGF-2)

## GLUCAGON

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- Also produced by cells in the pancreas, glucagon works to keep your blood sugar levels stable
- Prevents blood glucose levels from dropping to a dangerous point (Hypoglycemia – known as low blood sugar)
- Stimulates the conversion of glycogen (stored energy) to glucose in the liver. This glucose can be released into the bloodstream, a process known as glycogenolysis.
- Production is stimulated with a protein-rich meal, a surge in adrenaline (adrenals), or low blood sugar.

## LEPTIN

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- a hormone produced by the body's fat cells & plays a crucial role in appetite and weight control
- It is known as the “satiety” hormone and tells your body to stop eating
- regulates hypothalamus brain cells signalling for satiety (ie you don't want to eat anymore!)
- crosses the blood-brain barrier and binds to receptors in the appetite center in the brain
- increases sympathetic nervous system activity, which stimulates fatty tissue to burn energy Leptin Resistance
- A condition where there is either too much leptin and/or the signalling of this hormone is impaired at the receptor site What happens?
  - Eating More: The brain thinks that we MUST eat so that we don't starve to death.
  - Reduced Energy Expenditure: The brain thinks we need to conserve energy, so it makes us feel lazier and makes us burn fewer calories at rest.

## GHRELIN

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- Opposite to Leptin, Ghrelin is known as the “hunger hormone” it's main function is to increase appetite
- Made in the gut and stimulates brain activity which signals your hypothalamus to eat

- It can affect sleep/wake cycle, reward-seeking behavior, taste sensation and carbohydrate metabolism
- Increased during low calorie/ starvation type diets – the more you restrict food the higher ghrelin levels elevate – this is why dieters relapse and gain weight back
- Ghrelin and Leptin compete and play role in appetite and satiety

## CORTISOL

- a hormone produced by the adrenal glands.
- known as the “stress hormone” because it is released when the body senses stress
- This hormone is vital to survival
- Elevated cortisol cause many issues like acne, weight gain etc
- strict diets can also raise cortisol – those who consume lowcalorie diets have higher cortisol levels and feel more stressed

## ESTROGEN

- the most dominant female sex hormone
- It is mainly produced by the ovaries, and is involved in regulating the female reproductive system and fertility but will also be produced by fat cells/adipose tissue
- Both very high and low levels of estrogen can lead to weight gain
- Begins promoting fat storage at puberty and stimulates fat gain in the first half of pregnancy
- Estrogen mediates regulation of glucose levels

## TESTOSTERONE

- Dominant male sex hormone, but females also produce small amounts - it is produced in the testes, the ovaries and the adrenal glands
- Healthy levels are important for general health, disease risk, body composition, sexual function and mood
- There is a direct link between low testosterone levels and decreased insulin sensitivity leading to weight gain and metabolic syndrome
- Females can convert estrogen into excess testosterone via elevated insulin

## PROGESTERONE

- Hormone produced in the ovaries, the placenta and the adrenal glands.
- Prepares the body for conception and pregnancy and regulates the monthly menstrual cycle. Levels rise in the second half of the menstrual cycle - following the release of the egg (ovulation).
- Triggers the uterine lining to thicken prohibits the muscle contractions in the uterus. If too high or low levels the body will not ovulate.
- Symptoms of low progesterone in women who aren't pregnant include:
  - headaches or migraines
  - mood changes, including anxiety or depression
  - low sex drive • hot flashes • irregularity in your menstrual cycle

## MENOPAUSE

- True Menopause considered to be 1 year post menses
- Adrenal Glands pick up the job of the retiring ovaries
- Estrogen: During perimenopause, levels fluctuate and become unpredictable. Eventually, production falls to a very low level
- Progesterone: Production stops during menstrual cycles when there is no ovulation and after final menstrual period
- Testosterone: Levels peak in a woman's 20s and decline slowly thereafter. By menopause, level is at half of its peak.

## POLYCYSTIC OVARIAN SYNDROME

- Characterized by infertility, inability to ovulate/menstruate
- Issues with elevated estrogen or testosterone
- Underlying issues with insulin resistance

## METABOLIC SYNDROME

- Symptoms include a combination of high cholesterol, high triglycerides, high blood pressure
- Eventually can lead to Diabetes Mellitus – Type II

## ESTROGEN DOMINANCE

- A phenomenon occurring due to either too much estrogen, the inability to detoxify/biotransform or low progesterone
- Can occur if converting too much of the most potent form of estrogens • 4-hydroxyestrone • 16-alpha-hydroxyestrone

## HOW TO RECOGNIZE IMBALANCES

- **Puffiness + Bloating**
- **Weight gain**
- **Mood swings/Weepiness**
- **Anxiety/Depression**
- **Insomnia**
- **Flush red face**
- **Cervical Dysplasia (abnormal pap)**
- **Migraines**
- **Foggy thinking**
- **Gallbladder Issues**
- **Vaginal dryness/ dry eyes**
- **Night sweats/hot flashes**
- **Acne**
- **Thinning hair/Hair Loss**
- **Facial hair**
- **Ovarian cysts**
- **Infertility**
- **Mid-cycle pain**
- **PCOS**
- **Loss of muscle mass**
- **Breast growth**
- **Soft erections**
- **Fatigue**
- **Intolerance to exercise**
- **Brown spot on the face**

## BALANCE

**Avoid processed food:** Highly processed foods may compromise the integrity of the gut and drive inflammation

**Eat Soluble Fiber:** Eating this type of fiber can help improve gut health and may protect against obesity

**Exercise:** Physical activity / building lean muscle can help to reverse leptin resistance.

**Sleep:** Poor sleep has been implicated in problems with leptin signalling - those who sleep less or retire late are hungrier during the day

**Lower your triglycerides:** Having high blood triglycerides can prevent the transport of leptin from blood and into the brain - the best way to lower triglycerides is to reduce carbohydrate intake

**Eat Protein:** Eating plenty of protein can cause automatic weight loss

**Get your H2O:**  $\frac{1}{2}$  body weight in ounces daily, Add either  $\frac{1}{2}$  lemon, a pinch of sea salt or Apple Cider Vinegar to change the pH

**Try Intermittent Fasting:** Leave 12-18 hours between Dinner and then Breakfast the next day, Avoid snacking - stick to 5 hours minimum between meals and no "grazing"

**Take Flax** - 2 tbsp daily, Contains a phytochemical called lignans which has phytoestrogenic activity

**Follow a Keto/Paleo diet strategy** The keto diet is high in healthy fat, supplies adequate protein and gets carbohydrates from veggies. This combination changes the way energy is used in the body.

**Get off the Birth Control Pill** Consider options such as the Justisse

**Method Manage your Stress** Strategies to master emotions and outlets to channel stressful situations Journaling, walking, deep breathing, meditation, affirmations, acupuncture, etc

## **Avoid Xenoestrogens**

Endocrine disruptors are a category of chemicals that have the ability to mimic our natural hormones; blocking or binding hormone receptors (aka our body gets very confused thinking these are natural hormones and it sends us out of whack!)

### **How to avoid or reduce your xenoestrogen exposure?**

- Choose organic and buy hormone free meat, dairy, produce
- Do not drink out of plastic bottles (use BPA Free!)
- Do not microwave plastic containers
- Reduce the use of plastics whenever possible, use glass
- Use a chlorine filter on shower heads and filter drinking water
- Avoid creams and cosmetics that have toxic chemicals and estrogenic ingredients such as parabens
- Use naturally based fragrances, such as essential oils.
- Use chemical, sulfate, foaming agent free soaps and toothpastes.
- Read the labels on condoms and diaphragm gels, choose chemical free
- Minimize your exposure to nail polish and nail polish removers
- Avoid pesticides, herbicides, and fungicides
- Do not use spermicides
- Avoid DDT & PCBs – environmental toxins
- Avoid fake Soy and soy-based products/ meat alternatives
- Wine, alcohol and coffee promote estrogen, use with caution
- Be aware of noxious gas such as from copiers and printers, carpets, fiberboards, and at the gas pump
- Use chemical free, biodegradable laundry and household cleaning products. Choose chlorine-free products and unbleached paper products (i.e. tampons, menstrual pads, toilet paper, paper towel, coffee filters).

### **Supplement considerations**

Hormone support: • Adrenal support formula • Thyroid support formula • Liver decongestant • Dandelion, Black Radish, Milk Thistle, B-Vitamins, Antioxidants, Artichoke •

Hormone Detox: • DIM, I3C, Chastetree Berry/Vitex, Black Cohosh, Wild Yam, Calcium-d-glucarate, Dong Quai, Sulforaphane

