# Hormone Balancing

## (The Endocrine System)

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- Graphic Display of Organs that produce and regulate hormonal function
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- Symptoms of Male Hormone Imbalance
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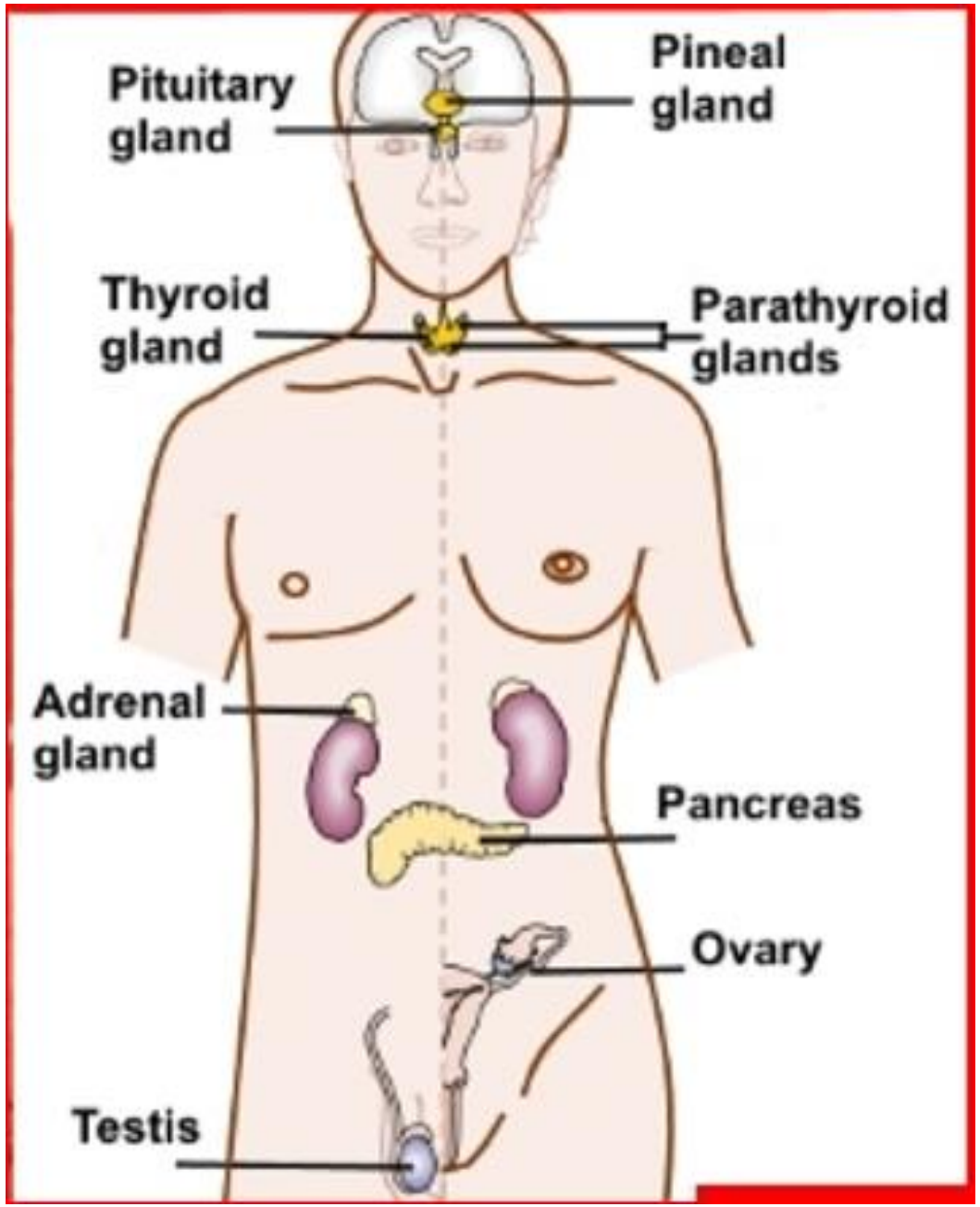
# Opening

- When we think about hormones, we often think about their sexual role. It has a much larger role, in every function, in our bodies. Their roles changes in various stages of the life cycle from birth to senior years, especially ones related to the reproductive and sexual role.
- Secondly, hormones plays a role in both women's and men's sexual health.
- Third, hormones from various organs interact with each other and work like an orchestra, need to be balanced, and be in the right range. Generally, very minute levels are needed.

# What is the Endocrine System?  What are Hormones?

- The endocrine is a system containing a number of organs that produce and regulate hormones.  These hormones function as chemical messengers. They help control every physiological process in your body, including metabolism, the immune system, menstrual cycle in women and reproductive roles in both men and women.
- Specific foods can aid and negatively affect your hormone balance, so eating a well-balanced diet is essential, especially during menopause for women and andropause for men.
- Hormones help regulate a number of functions in the body.
  - Hormones helps us to deal with stress
  - Hormones enable cells to perform their functions
  - Hormones play a role in our moods and feelings
  - Hormones play a role in the reproductive  and sexual function




**Graphic displaying the major organs as part of the Endocrine system that regulate hormones. The male chart is on the left and female chart is on the right.**

**Note: The thymus is not shown. Three other organs play a role in our hormonal health. They are: the hypothalamus, the gut, and the liver.**

Source:
https://www.healthyandnaturalworld.com/signs-of-hormonal-imbalance/ and
https://greensmoothiegirl.com/endocrine-disruptors

# List of Organs in the Endocrine System and Organs that play a major role with our hormones

- Adrenals
- Pancreas
- Parathyroids
- Pineal (in the brain)
- Pituitary (in the brain)
- Ovary (women)
- Testis (men)
- Thymus
- Thyroid

- Note: These organs are covered in more detail in the addendum.

# Importance of Balanced Hormones
## (Hormones in the right range)

- Hormones are critical to every function of every system in the body
- Both estrogen and progesterone are neuroprotective, helping brain function, reducing brain inflammation, and cognitive function
- Hormones and neurotransmitters (brain chemicals) have a relationship with each other
- Hormones and bone metabolism have a relationship with each other
- Thyroid hormone works better with proper progesterone levels
- Estrogen is cardio protective in women
- Progesterone helps regulate the body's immune system
- Hormones play a role in the digestive process
- Hormones play a role in our respiratory process

Note: It is similar to the orchestra theory of nutrients proposed by the biochemist Roger Williams.

# Symptoms of Hormonal Imbalance for both men and women

- Bone and Muscle Health
  - Pain and swelling in the joints
  - Pain in muscles, tenderness, and stiffness
  - Osteoporosis
- Digestive
  - Constipation
  - Diabetes
  - Digestive problems
  - Food cravings
- Cardiovascular
  - Decreased or increased heart rate
  - Cold intolerance
- Energy
  - Excessive fatigue
- Hair and Skin
  - Hair loss and hair thinning
  - Persistent acne
- Moods and Brain
  - Anxiety and irritability
  - Brain fog
  - Depression
  - Memory loss
  - Mood swings or irritability
- Sexual Function
  - Decreased sex drive
  - Low sex drive
- Sleep
  - Disturbed sleep, insomnia, sleep apnea
- Weight
  - Excessive weight gain
  - Weight loss or gain – persistent weight gain, belly fat, and loss of muscle mass

# Symptoms of Male Hormone Imbalance

- Symptoms
  - Erectile Dysfunction
  - Gynecomastia (development of breasts in men)
- Specific Male Hormone Imbalance:
  - Andropause – declining levels of testosterone and growth hormone

# Symptoms of Female Hormone Imbalance

- Symptoms
  - Hot flashes and night sweats
  - Hyperpigmentation of the skin
  - Infertility
  - Irregular or missed periods
  - Puffy face
  - Purple stretch marks
  - Sweaty skin
  - Vaginal dryness and itching
- Specific Female Hormone Imbalance:
  - Menopause – declining levels of estrogen secreted by the ovaries

Source: https://flo.health/menstrual-cycle/health/symptoms-and-diseases/hormonal-imbalance-in-women

# Other examples of Hormonal Imbalances

- Adrenal Fatigue – high stress levels leads to reduced cortisol levels
- Diabetes-declining levels of insulin from the pancreas (two kinds)
- Growth Hormone – growth hormone deficiency from the pituitary gland
- Hypothyroidism – underactive thyroid and reduced levels of thyroid hormones
- Hyperthyroidism – overactive thyroid

# Factors Contributing to Hormonal Imbalance

- Being overweight or obese
- Food allergies and gut issues
- Genetic susceptibility
- High amounts of stress
- High levels of inflammation caused by poor diet and a sedentary lifestyle
- Not enough sleep
- Toxicity (exposure to pesticides, toxins, viruses, cigarettes, food additives, excessive alcohol and harmful chemicals)

# Prevention and Treatment

- Avoid tobacco and smoking
- Avoid alcohol and other unhealthy choices
- Exercise regularly
- Healthy and balanced diet (plant based diet, clean foods without pesticides and food additives)
- Manage stress
- Monitor intake of plant based foods that contain phytoestrogens (for estrogen)
- Prescription Drugs and over the counter medications – minimize their use
  - Birth Control pills have issues
  - Avoid substances that trigger allergic reactions (which includes herbs)
- Sleep – getting enough sleep

# More Dietary Recommendations for Hormonal Balance or Health

- Anti-oxidant rich vegetables –
  - Dark greens – asparagus, broccoli, spinach, collard greens, cabbage, cucumbers, kale, coriander, etc.
  - Bright colored vegetables-green, red, yellow, and orange bell peppers, red cabbage, red/white onions, tomatoes, and carrots
  - Starchy vegetables – sweet potatoes, squash, yucca, beets, artichokes, butternut squash, and turnips
- Clean protein – beans, seeds, quinoa, lentils, lean meat (chicken, turkey, beef), fish, and eggs
- Healing spices and herbs – Cinnamon, Tumeric, Cayenne, Cumin, Garlic, and Ginger
- Healthy fats – avocados, egg yolks, nuts, and seeds

# Role of Food in Balancing Hormones

(or having hormones in the right range, especially during menopause)

**Foods to Use**

- Healthy fats (omegas-3 fatty acids)
- Whole grains
- Fruits and vegetables (especially cruciferous vegetables, dark berries)
- Phytoestrogen containing foods (chickpeas, peanuts, flaxseeds, barley, berries, green and black tea, and etc.)
- Quality protein (wild caught fish and grass fed meats)

**Foods to Avoid**

- Alcohol and caffeine
- Foods high in salt
- Nightshade vegetables
- Processed carbohydrates
- Spicy foods
- Soy
- Sugar
- White bread

Source: https://www.healthline.com/nutrition/menopause-diet and https://www.mindbodygreen.com/0-29200/these-8-foods-are-wreaking-havoc-on-your-hormones.html

# Plastics Effect on our Hormones

- Plastics are being found to interfere with our hormones. They are:
  - BPA contains fake estrogen and is in both hard and soft plastics
  - Phthalates is in solvents and soft plastics. It acts as an anti-androgen, blocking or preventing testosterone from working properly (affects both men and women)

More details are in: https://greensmoothiegirl.com/endocrine-disruptors

# Role of Bioidentical Hormones

- When your medical provider has identified a  hormonal imbalance, they can prescribe bioidentical hormone therapy.
- Problems are being found with synthetic version or prescription based version of hormones.
- As an example, armour thyroid is a type of bioidentical hormone, whereas synthroid is not a bioidentical version.  Bioidentical versions are versions that the body can better utilize.
- Testing needs to be done on an ongoing basis by your health care provider on your hormones.

# Role of Hormones in the Aging Process

- Men:
  - In men, the symptoms of aging are often the result of a growth hormone and testosterone decline. Some of the most common hormonal imbalances in men include: Andropause. It is known as the male menopause as men grow older and their testosterone levels decline.
- Women:
  - In women, they experience menopause, the cessation of periods.

Note: With bioidentical hormone treatment, hormones can be adjusted to levels experienced at younger ages. This improves health and delays the aging process.

# Addendum Table of Contents

# Addendum: Adaptogen Herbs that Help with Hormonal Health *(by Dr. Josh Axe, MD)*

- Adaptogen Herbs are a unique class of healing plants that promote hormone balance and protect the body from a wide variety of diseases, including those caused by excess stress. In addition to boosting immune function and combating stress, research shows that various adapotogens — such as ashwagandha, medicinal mushrooms, rhodiola and holy basil — can:
  - Improve thyroid function (5)
  - **Lower cholesterol naturally**
  - Reduce anxiety and depression (6)
  - Reduce brain cell degeneration
  - Stabilize blood sugar and insulin levels (7)
  - Support adrenal gland functions (8)

Source: https://draxe.com/10-ways-balance-hormones-naturally/

# Addendum: Adaptogen Herbs that Help with Hormonal Health continued

- Ashwagandha in particular, can be extremely effective at balancing hormones. It benefits thyroid function because it promotes the scavenging of free radicals that cause cellular damage. Ashwagandha can be used to support a sluggish or overactive thyroid, and it can also help to overcome adrenal fatigue. Your adrenals can become overtaxed when you experience too much emotional, physical or mental stress, leading to the disruption of hormones like adrenaline, cortisol and progesterone.
- Holy basil, which is also known as tulsi, helps to regulate cortisol levels, thereby working as a natural remedy for anxiety and emotional stress. Studies show that **holy basil** can also protect your organs and tissues against chemical stress from pollutants and heavy metals, which are other factors that can lead to hormone imbalance.

Source: https://draxe.com/10-ways-balance-hormones-naturally/

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- https://draxe.com/10-ways-balance-hormones-naturally/

# Addendum: Bibliography continued


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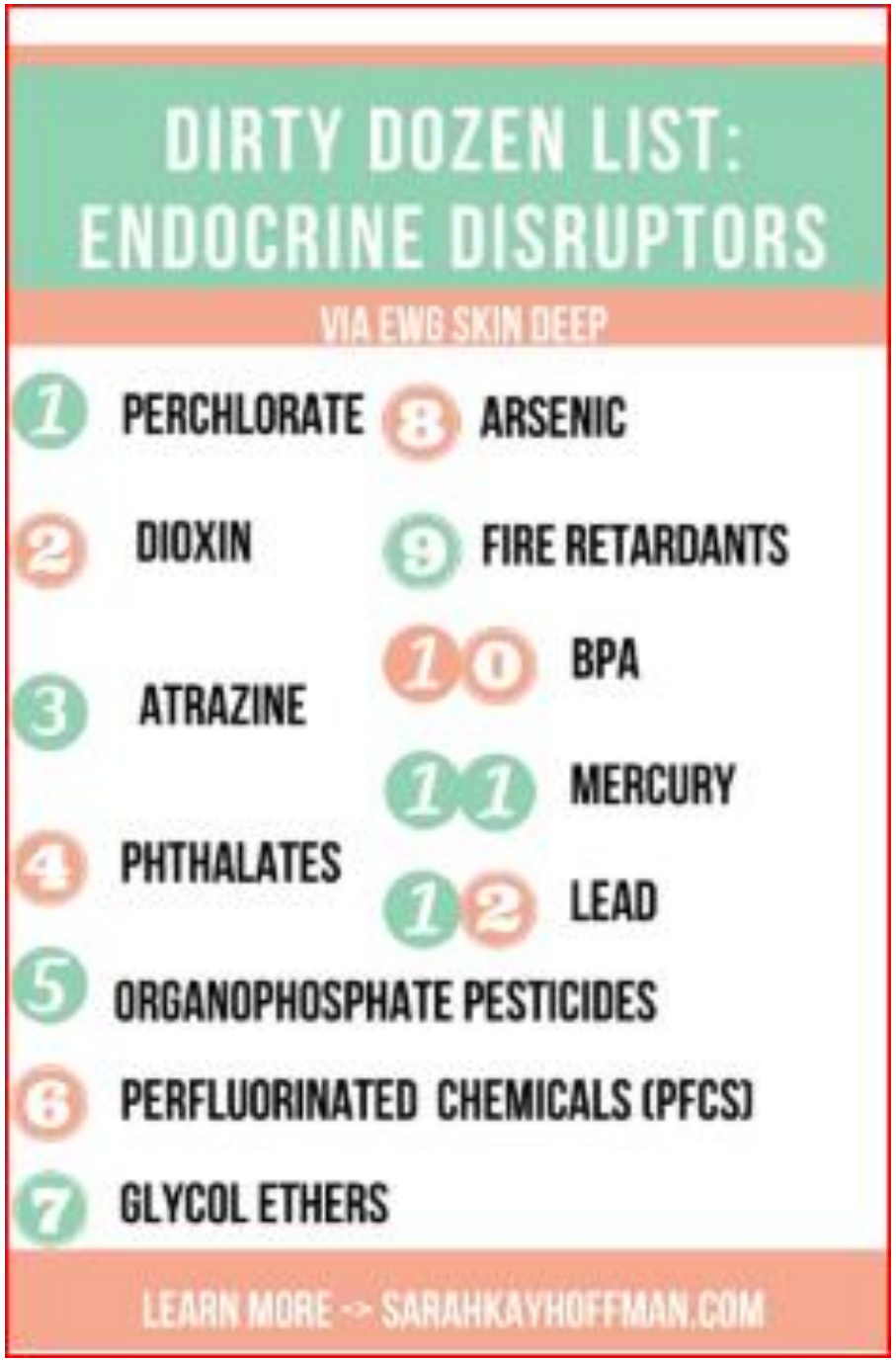
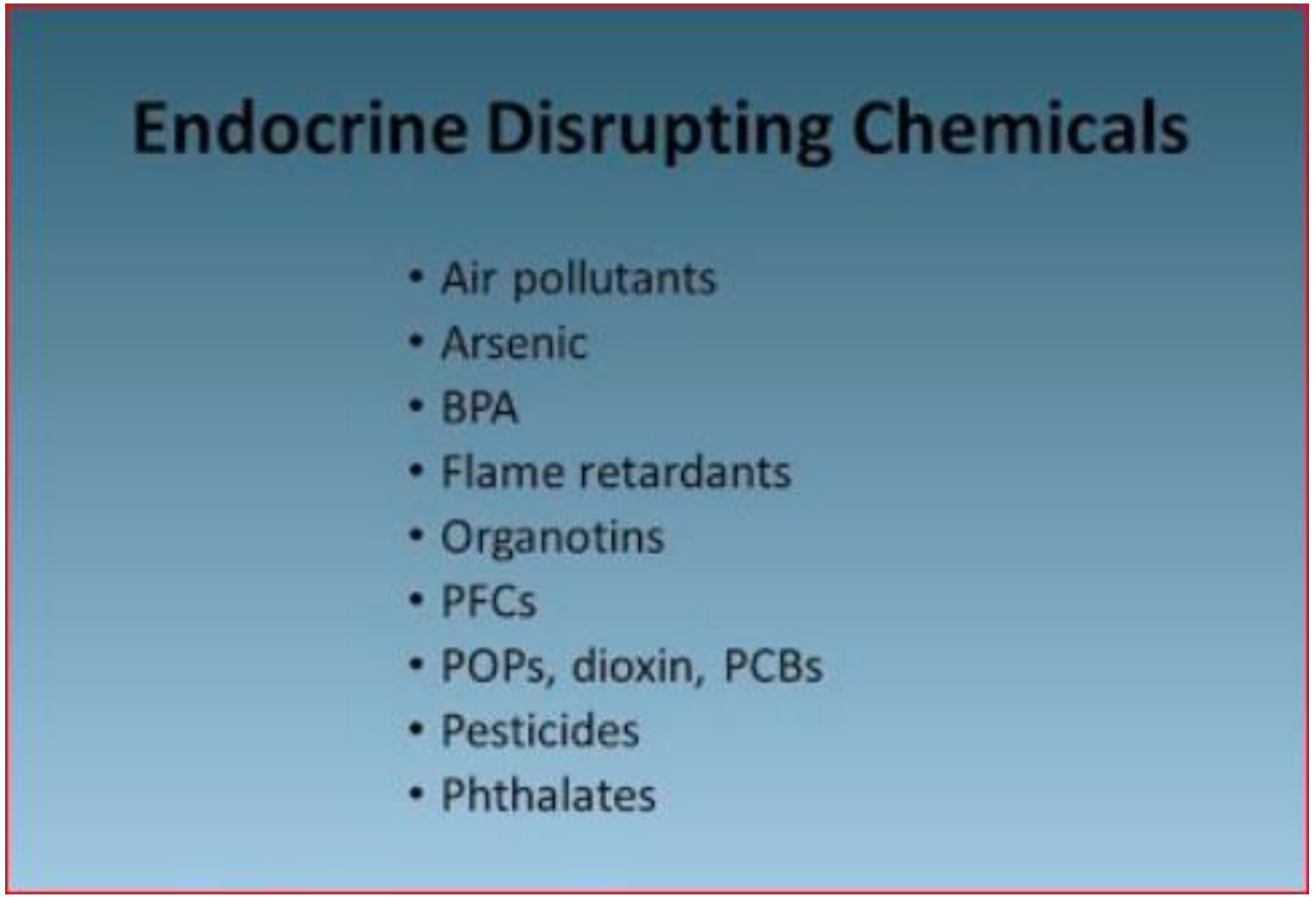
- https://greensmoothiegirl.com/endocrine-disruptors
- http://fluoridealert.org/

# Addendum: Dirty Dozen List of Endocrine Disruptors
# Graphic one



**Addendum: Dirty Dozen List of Endocrine Disruptors Graphic two**



# Addendum: Dirty Dozen of Endocrine Disruptors continued

- Arsenic (in a variety of sources)
- Atrazine (herbicide)
- BPA – a chemical that mimics estrogen (in plastics)
- Chlorine (in city water)
- Dioxins (in pesticides)
- Fire Retardants
- Fluoride (fluoridation, added to municipal water)
- Glycol Ethers (cleaning products and paint)
- Lead
- Mercury
- Organophosphate Pesticides
- Perchlorate (now in drinking water)
- PFCs (Perfluorinated chemicals)
- Phthalates (in solvents, plastics and fragrance)

Source: https://greensmoothiegirl.com/endocrine-disruptors

# Diseases Related to Hormone Imbalance (and organs in the Endocrine System)

- Adrenals – Adrenal Fatigue
- Pancreas – Diabetes Mellitus
- Parathyroid – Hypoparathyrodism
- Pituitary - Hypopituitarism
- Thyroid – Hypothyroidism, Hyperthyroidism, and Goiter

Source: https://endocrinesystem.organsofthebody.com/endocrine-system-disease.php

# Addendum: Foods that Wreak Havoc on Our Hormones

- Alcohol interferes with the brain, hypothalamus and pituitary gland
- Dairy contains IGF-1, a growth hormone. Excess IGF-1 can lead to higher risk of diabetes
- Factory Farmed Animals which can include testosterone propionate, trenbolone acetate, estradiol, zeranol, progesterone, melengestrol acetate, and bovine somatotropin
- Nightshades which include white potatoes, tomatoes, peppers, and eggplant
- Soy – contains phytoestrogen and most of it is GMO, genetically modified
- Sugar – spikes insulin
- White bread affects all hormones

Source: https://www.mindbodygreen.com/0-29200/these-8-foods-are-wreaking-havoc-on-your-hormones.html

# Addendum: Glossary

- Adaptogen herbs are a unique class of healing plants that promote hormone balance and protect the body from a wide variety of diseases, including those caused by excess stress. In addition to boosting immune function and combating stress, research shows that various adapotogens — such as ashwagandha, medicinal mushrooms, rhodiola and holy basil
- Endocrine disruptors and mimics – What they can do:
  - developmental malformations,
  - interference with reproduction,
  - increased cancer risk; and
  - disturbances in the immune and nervous system function. (Source: EPA)
- Fluoridation of Water – the practice of adding fluoride to municipal water systems, when fluoride is an industrial waste
- Iodine – Iodine is a mineral essential for our thyroid and overall health. Most of us are not getting enough iodine.
- Phytoestrogens-
  - The word phytoestrogens comes from the Greek word “phyto,” or *plant*, and “estrogen,” the hormone that causes fertility in all female mammals. Phytoestrogens have also been termed dietary estrogens because they’re not created by the human endocrine system. They can only be ingested or consumed.
  - A similar class of non-endocrine estrogens is xenoestrogens, synthetic estrogens found in certain kinds of plastic and pesticide products. While I deal primarily with a discussion on phytoestrogens in this article, it’s important to consider the combination and interaction of all of the environmental estrogens you encounter.
  - In their natural state, phytoestrogens exist within plants as a natural defense against herbivores. Plants secrete these hormones to modulate the fertility of animals that may eat them to reduce further attacks. (1) (Source: Dr. Josh Axe)

# Organs (List) in the Endocrine System and Organs that play a major role with hormones

- Adrenals
- Pancreas
- Parathyroids
- Pineal (in the brain)
- Pituitary (in the brain)
- Ovaries (women)
- Testes (men)
- Thymus
- Thyroid

# Addendum: Adrenals

- There are two components of the adrenals. They each produce hormones. They are the adrenal cortex (outer part) and the adrenal medulla (inner part)
- Located at the top of each kidney, the **adrenal glands** produce hormones that help the body control blood sugar, burn protein and fat, react to stressors like a major illness or injury, and regulate blood pressure. Two of the most important **adrenal** hormones are cortisol and aldosterone.
- Adrenals release cortisol. High levels of cortisol can raise your stress levels, blood pressure, visceral (abdominal) fat.
- The adrenal cortex releases hydrocortisone (cortisone) and corticosterone.
- Adrenal medulla releases epinephrine and norepinephrine.

Source: An overview of the Adrenal Glands by Dr. Robert Sargis, MD, PhD. It is in: https://www.endoctrineweb.com/endocrinology/overview-adrenal-gland

# Addendum: Pancreas

- Pancreas is responsible for insulin and glucagon as well as other hormones.
- Insulin attaches to glucose molecules and carries them into the cells, where they are used for energy
- When not eating for an extended period of time, the pancreas releases glucagon, which signals the liver to release stored glycogen into glucose.
- Insulin resistance occurs when the pancreas releases insulin but the cells in the muscles, fat, and liver are not able to absorb the insulin. Note: eat more complex carbohydrates instead of simple carbohydrates

Source: An overview of the Pancreas by Dr. Robert Sargis, MD, PhD. It is in: https://www.endoctrineweb.com/endocrinology/overview-pancreas

# Addendum: Parathyroids

- There are four parathyroid glands, very tiny glands, the size of a grain of rice.
- The parathyroid hormone regulates the body's calcium levels.
- This hormone helps the nervous and muscular system function properly.
- When it doesn't work properly, it can play a role in osteoporosis.

Source: An overview of the Parathyroid by Dr. Robert Sargis, MD, PhD. It is in:
https://www.endocrineweb.com/endocrinology/overview-parathyroid

# Addendum: Pineal (in the brain)

- The pineal gland located in the brain. It has been called the third eye.
- This gland secretes melatonin (not melanin). Light affects the secretion of melatonin. This hormone has two functions:
  - One, it helps control your circadian (or biological) rhythm (it refers to 24 hour biological clock)
  - Two, it helps regulate certain reproductive hormones

Source: An overview of the Pineal Gland by Dr. Robert Sargis, MD, PhD. It is in: https://www.endoctrineweb.com/endocrinology/overview-pineal-gland

# Addendum: Pituitary (in the brain)

- The pituitary gland is located at the base of the brain.
- This is considered to be a master gland because its hormones control other parts of the endocrine system, especially the thyroid, adrenal glands, ovaries, and testes.
- The pituitary gland has two parts, the anterior lobe and the posterior lobe, each with different functions.
- The anterior lobe produces adrenocorticotropic hormone (ACTH), follicle-stimulating hormone (FSH), growth hormone (GH), luteinizing hormone (LH), prolactin, and thyroid-stimulating hormone (TSH).
- The posterior lobe produces anti-diuretic hormone (ADH) and oxytocin.

Source: An overview of the Pituitary Gland by Dr. Robert Sargis, MD, PhD. It is in: https://www.endocrineweb.com/endocrinology/overview-pituitary-gland

# Addendum: Ovaries (women)

- Ovaries produce and release two groups of sex hormones—progesterone and estrogen.  Estrogen is three types: estradiol, estrone, and estriol. These substances work together to promote the healthy development of female sex characteristics during puberty and to ensure fertility.
- During, the pregnancy will trigger high levels of estrogen and progesterone, which prevent further eggs from maturing. Progesterone is secreted to prevent uterine contractions that may disturb the growing embryo. The hormone also prepares the breasts for lactation.
- More hormones are released during pregnancy than at any other time of a woman's life, but during menopause—which marks the end of fertility—estrogen levels fall fast.

Source: It is An Overview of the Ovaries *by* *Robert M. Sargis MD, PhD* *and it is in* https://www.endocrineweb.com/endocrinology/overview-ovaries

# Addendum: Testes (men)

- The testes produce testosterone, needed for proper physical development in boys of the changes are:
  - Healthy development of male sex organs
  - Growth of facial and body hair
  - Lowering the voice
  - Increase in height
  - Increase in muscle mass
- In adulthood, testosterone plays a role in libido, muscle strength, sperm productio bone density.
- The testes produce sperm
- Note: Women need a small amount of testosterone.

An Overview of the Testes by *Robert M. Sargis MD, PhD*. *It is in:*
https://www.endocrineweb.com/endocrinology/overview-testes

# Addendum: Thymus

- This is a gland located behind the sternum between your lungs, is active until puberty.
- This gland helps protect the body against autoimmunity and  plays a role in the lymphatic system and endocrine system.
- It produces a hormone called thymosin. It stimulates the development of T cells (part of the immune system).

Source: An Overview of the Thymus *by* *Robert M. Sargis MD, PhD* *and it is in* https://www.endocrineweb.com/endocrinology/overview-thymus

# Addendum: Thyroid

- By now, most people are familiar with the thyroid. This gland regulates the metabolism.
- The two main hormones produces by the thyroid is T3 (tri-iodothyronine) and T4 (thyroxine). It also produces calcitonin, which helps control blood calcium levels.
- Thyroid disorders are common, especially hypothyroidism, hyperthyroidism, and goiter.

Source: Thyroid Gland Overview : *The thyroid gland is a major player in regulating your metabolism, and assuring good general health by Robert M. Sargis MD, PhD. It is in:* https://www.endocrineweb.com/endocrinology/overview-thyroid

# Addendum: Thyroid continued

- As many people are dealing with thyroid health issues, three issues everyone needs to be aware of:
- One, the need for iodine levels and for a healthy thyroid. We need more.
- Two, the impact of fluoridation in our water systems (an industrial waste) is also affecting our thyroids. This combined with iodine deficiency makes it worse for our thyroids.
- Three, there are substances that can mimic iodine, and the body is confused about using them. They don't function like the actual iodine like bromine, part of the Halides chemical family.  Bromine displaces iodine in the body.

Source: : https://articles.mercola.com/sites/articles/archive/2018/10/23/thyroid-deficiency-linked-to-iodine-deficiency-fluoridated-water.aspx and https://articles.mercola.com/sites/articles/archive/2009/09/05/another-poison-hiding-in-your-environment.aspx

# Addendum: Supplements to Address Hormone Issues (by Dr. Josh Axe, MD)

- It's sometimes necessary to supplement in order to fill nutritional voids that can be leading to a hormone imbalance. Here are the top supplements that I recommend for your hormones:
- **Evening primrose oil**: Evening primrose oil contains omega-6 fatty acids, such as LA and GLA, that support overall hormonal function. Supplementing with evening primrose oil can help to relieve premenstrual and PCOS symptoms. It also helps to create a healthy environment for conception. (15)
- **Vitamin D**: Vitamin D almost acts like a hormone inside the body and has important implications for keeping inflammation levels low. This is why people who live in dark areas often suffer from seasonal depression and other health problems unless they supplement with vitamin D. Sunshine is really the best way to optimize vitamin D levels because your bare skin actually makes vitamin D on its own when exposed to even small amounts of direct sunlight. Most people should supplement with around 2,000–5,000 IU daily of vitamin D3 if they live in dark areas, during the winter, and on days when they're not in the sun. (16)
- **Bone broth**: Bone broth soothes the digestive system and supplies the body with nutrients that can be easily absorbed. Consuming bone broth or protein powder made from bone broth is especially beneficial to your health because it contains healing compounds like collagen, proline, glycine and glutamine, which have the powder to boost your overall health.
- **Probiotics**: Probiotics can aid in repairing your gut lining, which in turn can balance your hormones. When undigested food particles, like gluten for example, leak through your gut into your bloodstream, it causes disease-causing inflammation that impacts the entire body — especially glands like the thyroid that is very susceptible to heightened inflammation. Most people with leaky gut have an a deficiency of probiotics in their guts. Probiotics are healthy bacteria that can actually improve your production and regulation of key hormones like insulin, ghrelin and leptin. (17)
- Source: https://draxe.com/10-ways-balance-hormones-naturally/

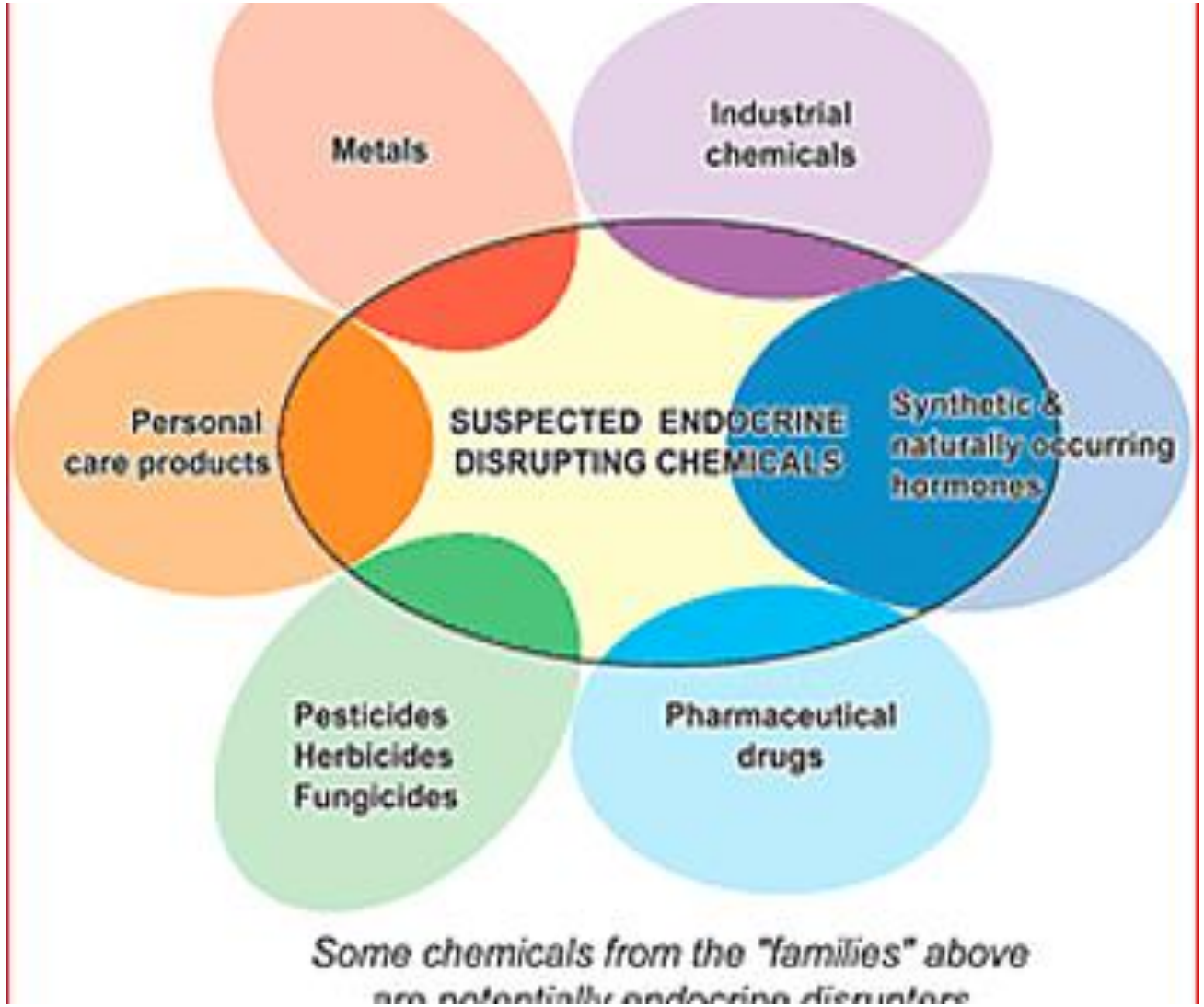
# Addendum: Tests for Hormone Health

- **Saliva testing**: Saliva testing measures your body's hormones levels at the cellular level. A saliva test can measure your estrogen, progesterone, testosterone, cortisol and DHEA levels. When you provide and test multiple samples over time, your healthcare provider can formulate charting changes in hormones with saliva testing.
- **Blood testing**: This type of hormone test requires that your blood is collected at a lab and then measured for hormone levels. A blood test can measure free (or active) and total hormone levels, which saliva and urine testing cannot do.
- **Urine testing**: A urine hormone test requires that you collect every drop of urine for a 24-hour period. Then your urine is tested to identify each hormone that is present and at what levels on that particular day. This is the most extensive hormone health test because it measures your hormone levels throughout the entire day, instead of the levels for a moment in time, which is the case for blood and saliva tests.
- **Follicle-stimulating hormone testing**: This type of test is commonly used to measure the hormonal status of premenopausal women who are beginning to experience symptoms of menopause.

Source: https://draxe.com/10-ways-balance-hormones-naturally/

# Conclusion

- Our bodies are actually marvelous and complex systems.
- When they work in an optimum way, we will feel our best.
- When one component of our organs don’t work right, especially when it comes to the endocrine system and hormonal health, we will feel it.
- As this research evolved, it looks like endocrine issues are also a major health problem in addition to nutritional deficiencies.
- Diets with clean food, plant based food, and the quality of our nutrition plays a major role in hormonal health.




*Some chemicals from the "families" above are potentially endocrine disruptors*