

Androgens

What are “Androgens”

- A class of hormones and metabolites that are classically thought of as the “male” hormones as they are responsible in males to drive development of secondary sex characteristics
- They also have critical function in females, which we will discuss!

Androgens in a Cycling Female

- While we might think of androgens as “male” hormones, they have critical function in females also!
 - Precursors to production of estrogen & progesterone
 - Critical for follicular development and egg quality
- Testosterone, the predominant androgen, is made in ovaries (25%), adrenals (25%) and fat (50%, converted from androstenedione)
 - In postmenopausal females, this shifts to mostly production by the adrenal glands
- Peaks in a female’s 20’s and 30’s and then has a steady decline after

Androgen Metabolites on the DUTCH

On the DUTCH test, we test the following eight androgen metabolites:

- Testosterone
 - 5a-DHT
 - 5a-androstenediol
 - 5b-androstenediol
- Epi-testosterone
- DHEA-S
 - Androsterone
 - Etiocholanolone

Testosterone

Benefits of Testosterone

- Growth- muscle mass & stamina
- Libido & sexual function
- Healthy weight
- Healthy bone
- Skin, hair health
- Mood & memory
- Fertility
- Cardiovascular health
- Support estrogen levels (especially in postmenopausal women)

Testosterone Metabolism

- Testosterone is metabolized into
 - 5-a DHT
 - Primarily in target tissues by the enzyme 5a-reductase
 - 3x more potent than testosterone
 - 5a-androstenediol
 - Primarily in target tissues, so is possibly a better marker for TISSUE 5a-DHT activity than urinary 5a-DHT
 - 5b-androstenediol
 - Primarily in the LIVER by 5b-reductase
 - Not as androgenic, and doesn't correlate with androgenic symptoms like libido, body hair, muscle mass and others

High Testosterone- Symptoms

- Acne
- Greasy skin
- Increased facial & body hair
- Thinning scalp hair and androgenic alopecia
- Mood disturbance (Irritability, aggression, etc)

If Testosterone is High

Look at DHEA

- If high, the excess androgens are likely coming from the adrenal production of DHEA
- If normal, the source of excess androgens is likely ovarian

High Testosterone- Possible Root Causes

- Low sex hormone binding globulin (SHBG)
- PCOS
- Non-classical congenital adrenal hyperplasia (NCCAH)
- Virilizing tumors
- Hyperprolactinemia
- Elevated growth hormone
- Thyroid dysfunction
- Obesity and blood sugar dysregulation
- Stress
- Inflammation

High Testosterone – Support Considerations

- Assess & treat the cause
- Balance blood sugars
- Weight loss (if appropriate)
- Supporting the HPA axis & lowering stress
- Liver support
- Flax seeds, myo-inositol
- Herbal anti-androgens

Low Testosterone: Signs & Symptoms

- Fatigue
- Weight gain
- Difficulty building muscle mass
- Bone loss
- Mood changes
- Brain fog
- Low libido

Low Testosterone: Potential Root Causes

- Low adrenal output (HPA axis dysfunction)
- Poor ovarian production of androgens
- High aromatase activity
- Diabetes
- Sleep disturbance
- Alcohol intake
- Hypothyroidism
- Older age
- Endocrine disrupting chemical exposures
- Low body fat or caloric deficit
- Low cholesterol
- Traumatic brain injuries
- Suboptimal mitochondrial dysfunction
- Zinc deficiency
- Elevated SHBG
- Hypogonadism

Low Testosterone: Support Considerations

- Affirm testosterone is also low in serum
- DHEA supplementation (if appropriate)
- Zinc
- Herbal testosterone support
- HPA axis support
- High intensity interval training (HIIT) & weightlifting
- Improve sleep
- Reduce alcohol & balance blood sugar
- If estradiol and estrone are elevated, consider aromatase inhibitors

DHEA

About DHEA

- Considered a "prehormone"
- Most of it converts to more potent androgens and estrogens at the tissue level
- DHEA is made by the adrenal glands (80%) and ovaries (20%) in cycling females
- At the tissue level, 50-75% of estrogens and most androgens are derived from DHEA in cycling females
 - Almost ALL in postmenopausal females!

Benefits of DHEA

- Supports muscle & bone health
- Supports sexual function
- Supports fertility
- Supports brain health
- Supports immune function
- Supports cardiovascular health

DHEA Metabolism

Total DHEA = DHEA-S + etiocholanolone + androsterone

DHEA is metabolized into:

- DHEA-S: a more stable form that can act as a reserve of DHEA
- Etiocholanolone
- Androsterone

High DHEA- Symptoms

Similar to high testosterone or other androgens

- Acne
- Greasy skin
- Mood disturbance (Irritability, aggression, etc)
- Headaches
- Insomnia

High DHEA- Possible Root Causes

- Stress or high adrenal output (hypothalamic-pituitary-adrenal (HPA) axis dysfunction)
- Blood sugar dysregulation
- Inflammation
- Alcohol or nicotine intake
- PCOS
- High prolactin
- Adrenal tumor
- Supplementation or some medications (such as alprazolam, bupropion and others)

High DHEA– Support Considerations

- Assess & treat the cause
- Address any chronic inflammation
- Regulate blood sugar
- Support liver detoxification
- HPA axis support
- Stress reduction
- Parasympathetic nervous system and GABA support

Low DHEA: Signs & Symptoms

- Fatigue
- Depression
- Infertility
- Low libido
- Higher risk of heart disease, inflammation, autoimmune disorders, and immune dysfunction

Low DHEA: Potential Root Causes

- Low adrenal output (HPA axis dysfunction)
- Chronic Stress, inflammation, and blood sugar dysregulation
- Chronic infection
- Older age
- Hypothyroidism
- Medications such as glucocorticosteroids, opioids, budesonide inhaler, and metformin

Low DHEA: Support Considerations

- Assess and treat the root cause
 - Chronic inflammation
 - Blood sugar management
- Support Liver Detoxification
- Stress reduction
- Parasympathetic nervous system support and GABA support
- Oral DHEA supplementation
 - Caution, as this may also increase estrogens

Thank You!

If you are interested in learning more about hormones, each week we hold one-hour long mentorship sessions! Once you are a registered DUTCH provider, you can book these through our online scheduling link. Please call to get registered today.

For questions, contact:

info@dutchtest.com

(503) 687-2050

www.dutchtest.com

