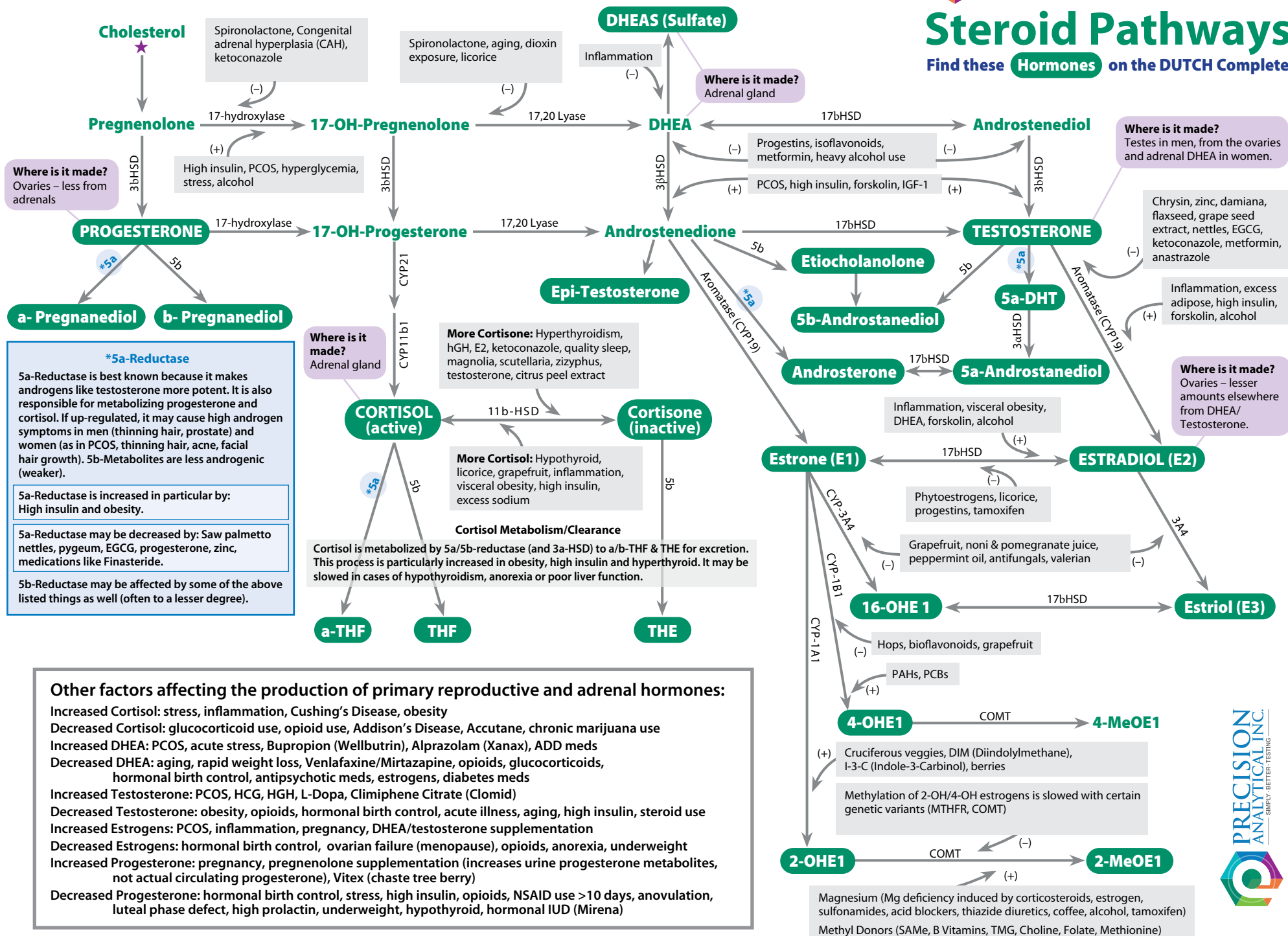


Primary hormones (in CAPS) are made by organs by taking up cholesterol **★** and converting it locally to, for example, progesterone. Much less is made from circulating precursors like pregnenolone. For example, taking DHEA can create testosterone and estrogen, but far less than is made by the testes or ovaries, respectively.

Steroid Pathways

Find these **Hormones** on the **DUTCH Complete**



***5α-Reductase**
5α-Reductase is best known because it makes androgens like testosterone more potent. It is also responsible for metabolizing progesterone and cortisol. If up-regulated, it may cause high androgen symptoms in men (thinning hair, prostate) and women (as in PCOS, thinning hair, acne, facial hair growth). 5β-Metabolites are less androgenic (weaker).

5α-Reductase is increased in particular by:
High insulin and obesity.

5α-Reductase may be decreased by: Saw palmetto, nettle, pygeum, EGCG, progesterone, zinc, medications like Finasteride.

5β-Reductase may be affected by some of the above listed things as well (often to a lesser degree).

Where is it made?
Adrenal gland

More Cortisone: Hyperthyroidism, hGH, E2, ketoconazole, quality sleep, magnolia, scutellaria, zizyphus, testosterone, citrus peel extract

More Cortisol: Hypothyroid, licorice, grapefruit, inflammation, visceral obesity, high insulin, excess sodium

Cortisol Metabolism/Clearance
Cortisol is metabolized by 5α/5β-reductase (and 3α-HSD) to a/b-THF & THE for excretion. This process is particularly increased in obesity, high insulin and hyperthyroid. It may be slowed in cases of hypothyroidism, anorexia or poor liver function.

Other factors affecting the production of primary reproductive and adrenal hormones:

- Increased Cortisol: stress, inflammation, Cushing's Disease, obesity
- Decreased Cortisol: glucocorticoid use, opioid use, Addison's Disease, Accutane, chronic marijuana use
- Increased DHEA: PCOS, acute stress, Bupropion (Wellbutrin), Alprazolam (Xanax), ADD meds
- Decreased DHEA: aging, rapid weight loss, Venlafaxine/Mirtazapine, opioids, glucocorticoids, hormonal birth control, antipsychotic meds, estrogens, diabetes meds
- Increased Testosterone: PCOS, HCG, HGH, L-Dopa, Clomiphene Citrate (Clomid)
- Decreased Testosterone: obesity, opioids, hormonal birth control, acute illness, aging, high insulin, steroid use
- Increased Estrogens: PCOS, inflammation, pregnancy, DHEA/testosterone supplementation
- Decreased Estrogens: hormonal birth control, ovarian failure (menopause), opioids, anorexia, underweight
- Increased Progesterone: pregnancy, pregnenolone supplementation (increases urine progesterone metabolites, not actual circulating progesterone), Vitex (chaste tree berry)
- Decreased Progesterone: hormonal birth control, stress, high insulin, opioids, NSAID use > 10 days, anovulation, luteal phase defect, high prolactin, underweight, hypothyroid, hormonal IUD (Mirena)

Information on this chart is for educational purposes only and is not a suggestion for supplementation with any of the listed items. References available upon request.