

Adrenal Glands

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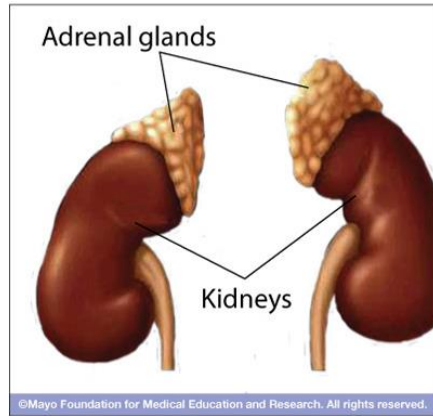
Adrenal
Gland



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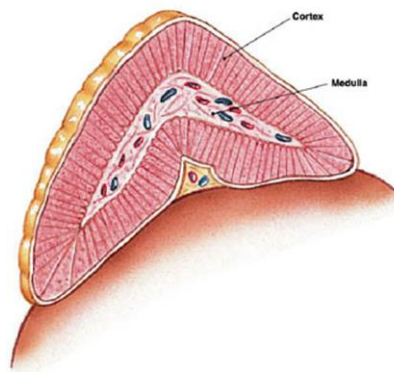
Encased in
Ribbon of Fat –
Very
Vulnerable to
EDCs



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Two
Separate
Glands



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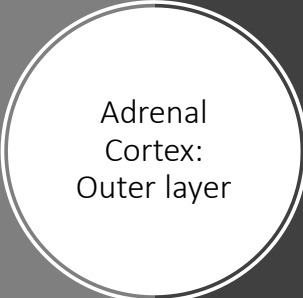


Adrenal
Hormones

- Two organs really –
 1. Cortex (80%)
 2. Medulla (20%)
- Secrete very different hormones
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Adrenal
Cortex:
Outer layer

- Three layers –
 1. Zona Glomerulosa – Mineralcorticoids
*Aldosterone— blood pressure and electrolyte balance 24-hr urine test measure aldosterone
 2. Zona Fasciculata – *Cortisol, *cortisone – saliva and urine measure - Immune system, metabolism (including sugars)
 3. Zona Reticularis –sex steroids: Androgens, Pregnanolone, Progesterone, DHEA – all of these work to keep estrogen SAFE!
- * made only in the adrenals

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Medulla
(inner part of
adrenal
glands)

- Catecholamines (driven by sympathetic, fight or flight nervous system – rapid response for stress)
 1. Adrenaline
 2. Noradrenaline —(tyrosine helps thyroid but too much reduces noradrenaline production)

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Prioritized by Nature

- Next to the hippocampus, heart and parietal cells, the adrenal glands have one of the largest blood supplies in the body.
- As there are cortisol receptors on every cell in the body (along with its best friend, thyroid and vitamin A receptors)



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Dr. John Lee – Australian Surgeon –
Hashimoto's thyroidectomy specialist until...



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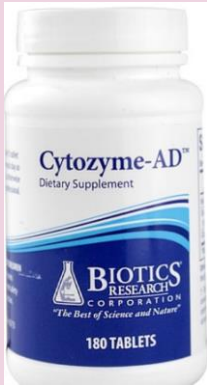
Cortisol Helps thyroid deliver its complex signal



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Adrenal Health is Sustained
Healthy Adrenal Signaling –
winning duo



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Symptoms of Adrenal Dysfunction

- Orthostatic hypotension
- Decreased sexual interest
- Exhaustion after orgasming
- Exhaustion after exercise
- Orgasms have less power (seem not worth all that work)
- Muscular weakness
- Wake up exhausted
- Recurrent infections even at distance body tissues

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Symptoms cont.

- Sex steroid issues ie estrogen alpha dominance in both men and women
- Thyroid malfunction and hard to get prescription right
- Increased PMS, Peri and Post menopausal symptoms
- Liver spots (chloasma)
- Increased allergies
- Edema especially in ankles

Symptoms Cont.

- Fatigue after exercise
- Procrastination – especially more than historically
- Everything is taking more effort and not seeming worth it (aging issue as adrenals are aging)
- Poor stress tolerance
- Chemical sensitivity's
- Need to lie down a lot
- Need to put feet up on something or feels almost painful
- IBS symptoms (constipation/diarrhea)
- Breathing oddities: hyperventilate frequent sighing, gasping, catch yourself holding your breath frequently
- Dyslexic energy, less in AM and more in PM

Symptoms Cont.

- Lack of concentration
- Mental fatigue, brain fog, memory issues, confusion
- Tendency to anxiety
- Emotionally labile, up and down
- Over reacts
- Sense of isolation, alienation withdrawal from community

Symptoms cont.

- Communication skills are deteriorating
- Increase: risk taking, recreational drugs, alcohol, addictive behaviors
- History of Post Traumatic Stress Disorder Syndrome
- Abdominal fat can occur with excess or too little cortisol

Symptoms Cont.

- Exercise Less
- Exercise excessively for their physiology
- Lay down more
- Crave putting feet up
- Intolerance to carbs
- Cravings (sugar, salt, high fat and fried foods, and stimulants)
- Use caffeine, nicotine sugar, carbs to keep going

Low Morning Cortisol is the bomb

- Immune dysregulation — 8 AM to 10 AM cortisol sets the “immune capacity for the day”
- Extreme fatigue
- Non-restorative Sleep
- Increased incidence of autoimmune diseases
- Linked to health of SIgA
- Obesity
- Its putative role in the regulation of physiological function across the day (e.g. the immune system) and its sensitivity to psychosocial variables make it a prime candidate as an intermediary linking mind and health.
- Severe hi or lows of cortisol lower SIgA.
- Low AM cortisol and/or flat line linked to chronic fatigue.
- **Cytozyme AD loading 3 twice a day for 3 days and then two twice a day**

- [Stress](#), 2004 Mar;7(1):29-37. The awakening cortisol response: methodological issues and significance.
- [Int J Psychophysiol](#). 1998 Dec;31(1):69-76. The relationship between salivary secretory immunoglobulin A and cortisol: neuroendocrine response to awakening and the diurnal cycle.
- [Endocrinol Med Biol](#). 2014 Apr;42:199-206. doi: 10.1016/j.psyneuen.2014.01.017. Epub 2014 Jan 30. The role of hypocortisolism in chronic fatigue syndrome.

Cortisol - Fat

- Saliva was collected in a single morning from 478 residents in Eastern Highlands Province and Madang Province.
- After adjusting for age, region, and occupation, the morning salivary cortisol concentration was significantly negatively correlated with body mass index among men and women and waist circumference
- **Men with total or abdominal excessive body fat displayed lower cortisol compared to men without such risk.**
- Papua New Guinean adults with increased accumulation of body fat showed reduced cortisol concentration in morning saliva.

[Am J Hum Biol.](#) 2016 Jul;28(4):587-90. doi: 10.1002/ajhb.22823. Epub 2016 Jan 22.

Reduced morning cortisol concentration in saliva was associated with obesity: Evidence from community-dwelling adults in Papua New Guinea.



Major Cause of Adrenal Insufficiency in menopausal and andropausal

- Estrogen/P insufficiency in women
- Testosterone/P insufficiency in gents
- Facial cream – estriol ½ mg progesterone 5 to 10 mg in men.





Hydrocortisone

- **Generic Name:** [hydrocortisone tablet](#)
 - **Brand Name:** Cortef
 - **Glucocorticoid**
 - $\frac{1}{2}$ 5 mcg up to 40 mg
 - **Safe Uses of Hydrocortisone by Jeffries MD**
-

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DHEA

- Peaks at 25 years of age
 - Declines progressively By 70 years old about 20% of level at 25 years of age
 - Keeps estrogen "breast friendly" versus not
 - This decline overlaps with increasing in manifestations of aging.
 - Most "reactive" hormone next to progesterone
 - Can de-sensitize or also take 7-keto form
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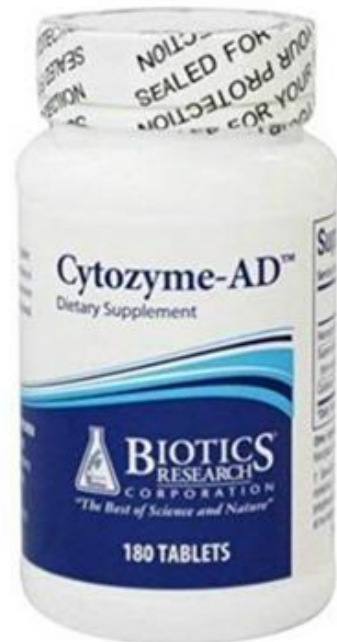
Many Applications Clinically

- No recognized DHEA deficiency
- Most of DHEA is made in adrenal glands in women and if has adrenal insufficiency then DHEA levels can be very low
- Not so with males as testis produce high levels of DHEA.
- Protects estrogens from acting pro-carcinogenic (work of Labrie France)

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Cytozyme AD

- Glandular loading 3 BID
- Then 2 BID
- Give along with PABA Daily Hormone Balane
- For better sustained results!



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DHEA

- Double-blind studies show that DHEA replacement in adrenal insufficiency or aging:
- Increase overall well-being
- Decrease anxiety, depression,
- Improve energy
- Improve sexuality
- Improves insulin resistance especially in women with adrenal dysregulation

Dosages

- Women 5 to 15 mg/ Proteday
- Males 10-20 mg/day
- Along with Cytozyme AD if adrenal issue
- And Daily Receptor Detox and Daily Protect & Balace
- Reverse many issues of aging: poor appetite, poor muscle mass, weakness and even
- Rapid bone density improvement.
- Higher than physiologic dosages clinically appear to help autoimmune diseases by clinical observation of Lamson and Gaby.

Blood Testing

- DHEA – biologically active form
- DHEAS – 1000 times higher in blood so easier to measure accurately.
- Measure both.

DHEA - cancer

- No clear evidence that it increases risk
- In postmenopausal women, doses 300-500 mg/day topically for one year did not cause endometrial proliferation.
- Does not promote prostate cancer.
- One case study of a man with prostate cancer was taking 200-700 mg/d and worsened.

DHEA + Prednisone

- Lowers when patients are on oral glucocorticoids (prednisone) as they suppress adrenal glands
- This may be why bone loss occurs on prednisone as DHEA protects bone
- So it may be good to give along with prednisone prophylactically but no clear evidence

DHEA + Thyroid

- Alan Gaby MD – About 10% of patients taking thyroid replacement get hyperthyroid on DHEA so may need to reduce dose and certainly need to track thyroid

To E & T

- In a double-blind study giving postmenopausal women **oral 2 mg of estradiol** for 12 weeks causes a 23% reduction in DHEAS.
- Suggests that BHRT increases the need for DHEA.
- Since DHEA goes to either E or T, it may reduce need for dosage of BHRT.

DHEA & Progesterone

- DHEA does not convert to P, but it has been linked to increasing P levels.
- Appears to make GH more available and if on it may reduce the dosage needed.
- Long-term low-dose DHEA orals supplementation in early and late postmenopause. Ferti & Steril. 2003;80:1495-1501

Over- the- Counter

- A 1998 study found that 7 of 16 DHEA products sold in health food stores contained 90 to 110% of amount of DHEA stated on the label.
- One product had none.
- One product had 150% more.
- Another study found higher levels than what was on the label.
- Quality control of DHEA supplement products. JAMA 1998.280:1565

Adverse Effects

- Acne dermatitis,
- Greasy oily skin
- Alopecia
- Breast tenderness
- Vertigo
- Increase odor of sweat in larger dosages in some
- Occasionally, hirsutism (excessive body hair)

Adjunctive Care for Lupus

- Numerous studies demonstrate a reduction in Systemic Lupus Erythematosus activity
- Even more so if on glucocorticoids but also if not
- At 100 to 200 mg but some show marked improvement up to 600 mg/day, especially reducing fatigue and improving emotional wellbeing.

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DOSING

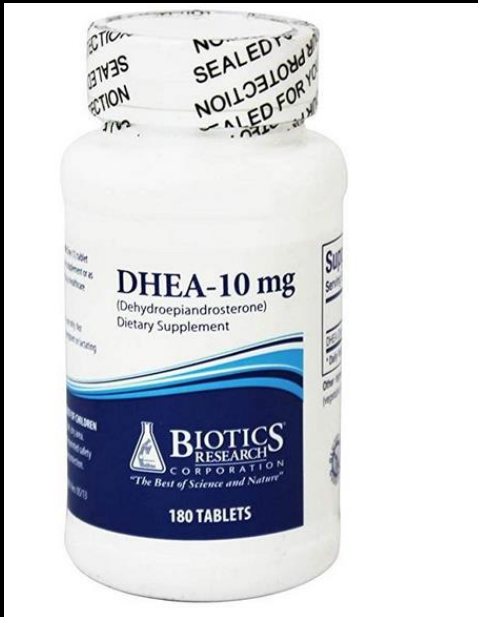
- While daily intravaginal administration of 0.50% (6.5 mg) dehydroepiandrosterone (DHEA, prasterone) for 12 weeks has shown clinically and statistically significant effects on moderate to severe (MS) dyspareunia as the most bothersome symptom (MBS), the present study analyzes the effect of a reduced dosing regimen on MBS vaginal dryness.
- Daily intravaginal 0.50% prasterone for 2 weeks followed by twice weekly for 10 weeks versus placebo.
- Maximal beneficial changes in vaginal parabasal and superficial cells and pH were observed at 2 weeks as observed for intravaginal 10 µg estradiol (E2).
- No significant adverse event was observed. Vaginal discharge related to the melting of Witepsol was reported in 1.8% of subjects.
- The present data show that daily dosing with 0.50% DHEA for 2 weeks followed by twice-weekly dosing is a suboptimal treatment of the symptoms/signs of vulvovaginal atrophy resulting from a substantial loss of the efficacy achieved at daily dosing.

[Climacteric](#). 2015;18(4):590-607. doi: 10.3109/13697137.2014.992012. Epub 2015 Mar 3.

Decreased efficacy of twice-weekly intravaginal dehydroepiandrosterone on vulvovaginal atrophy.

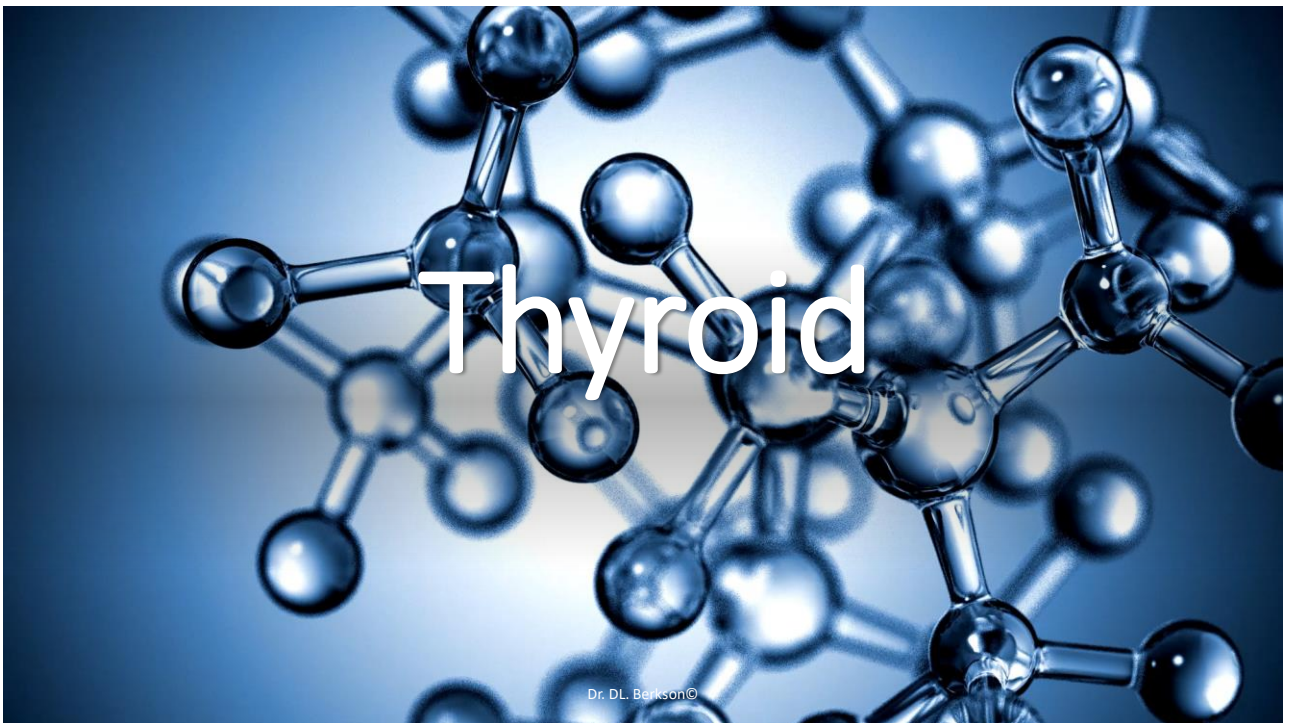
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DHEA 5 to 25
mg or more
for
autoimmune
diseases such
as up to
hundreds of
mg/d



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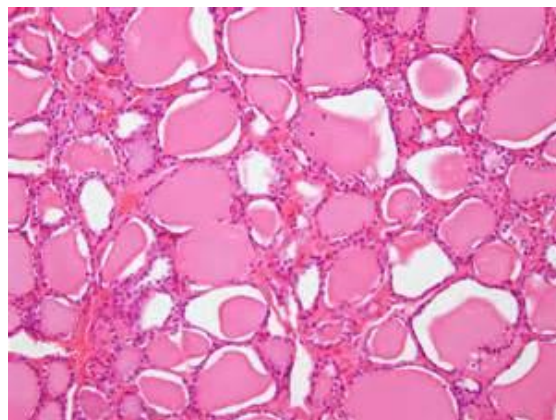
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Thyroid gland nothing else looks like it

- Cysts lined with single cells soldiers (epithelium) filled with pinkish material (colloid) that easily fills with toxins
- In between are lots of blood vessels very vascular
- Huge blood supply as runs the 'fuel' of the body
- Hormone is stored inside the follicles
- Thyroid makes thyroid hormone T3 and T4 and thyro-calcitonin or calcitonin or C cells are made by cells in spaces in between follicles

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Thyroid



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- September 6, 1976
- **Breast Cancer Relationship to Thyroid Supplements for Hypothyroidism**
- [Chandrakant C. Kapdi, MD](#); [John N. Wolfe, MD](#)
- Author Affiliations
- JAMA. 1976;236(10):1124-1127.
doi:10.1001/jama.1976.03270110022020

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Brownstein
MD

- The study found a **200%** (not a 50%) increase risk of breast cancer in women who took thyroid hormone for at least 15 years as compared to women who did not take thyroid hormone. You read that correctly: a **200%** increase risk of breast cancer in women who took thyroid hormone as compared to women who did not take thyroid hormone.
- How could that be? The answer is simple: The increased breast risk in thyroid supplemented women is due to iodine deficiency.
- If the majority of the women were deficient in iodine, then taking thyroid hormone would be the wrong treatment.
- Thyroid supplementation increases the body's metabolic needs and therefore increases the body's need for iodine.
- If someone is iodine deficient and is prescribed thyroid hormone, thyroid supplementation will worsen the iodine-deficiency problem.

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Rule out Iodine Deficiency

- Iodine deficiency - thyroid hormone prescription was taken as all supplemental thyroid hormones—both natural and synthetic forms—increase the body's metabolic needs for more iodine.
- Talc
- Red dye
- Gluten

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Type of Underactive Thyroid

- Overt
- Subclinical

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Blood values for thyroid are “lacking”

- www.medscape.com
-
- **Preconception TSH and Pregnancy Outcomes**
- **A Population-Based Cohort Study in 184 611 Women**

Subclinical

- Normal hormone levels
- Symptoms of low thyroid
- No treatment deemed necessary
- Less than optimal thyroid function (low production of T4, poor conversion of T4 to T3, poor cell uptake of T3, dysfunctional thyroid receptors
- Poor methylators as methylation depends on Thyroid hormone – conversion of riboflavin to MTHFR is impaired.
- Medscape

Lots of Studies

- Subclinical hypothyroidism linked to significant symptoms
- Aggressive heart disease
- Severe mood disorders
- Cognitive issues! (Dr. Gaby's psychiatric patient)
- Increased risk for morbidity and mortality
- More appropriate term: Mild Thyroid Failure not demonstrated by typical labs (MTF) or SHT – subclinical hypothyroidism

Mildest deficiency

- But can have far reaching issues
- Increased heart disease risk
- Higher inflammation hs CRP
- Higher total cholesterol
- Higher bad cholesterol LDL c and
- Higher Lp(a)
- Alan Gaby's patient

If not treated:

- Higher risk of faster CAD 2.2 fold higher
- 1.5 fold higher death from it
- Treatment is warranted despite normal TSH and T4

First step

- Is often looking at the minerals needed: iodine, selenium, zinc, magnesium and B vitamins
- As well as addressing any ADRENAL issues first

In-depth sound thyroid testing

- TSH is not most sensitive and misses a lot of cases
- Holterf = receptors on pituitary for thyroid different than any other in the body so he no longer runs TSH but of course this is not standard oif care.
- The Thyroid receptors on the pituitary are different than the rest of the body.
- Total T4, Total T3, free T3, reverse T3, TPO and TBG
- Symptoms rule!

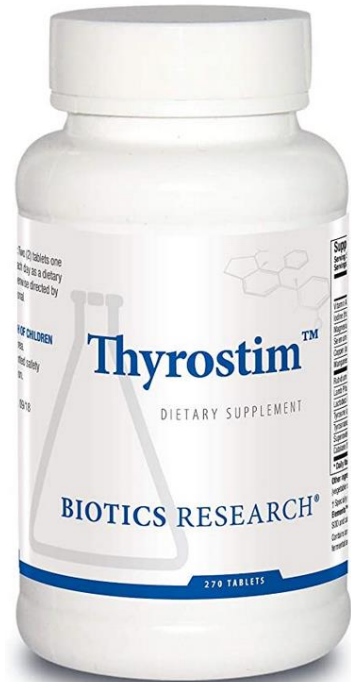
Conversion issues

- T4 may not convert to T3
- Due to: dieting, stress, selenium, iron, zinc deficiencies
- Insufficient zinc/selenium
- Drugs: amiodarone, beta blockers including some glaucoma meds and dilantin

May not need treatment forever

- If get to the thyroid before completely damaged
 - Fix adrenals
 - Reboot receptor
 - It can recover it's function it is not true that once on thyroid medication, always on thyroid medication
 - Thyroid glandulars!
 - Selenium keeps thyroid functioning better.
 - Selenium and rubidium changes in subjects with pathologically altered thyroid. Biol Trace Elem Res. 1992 Jan-Mar;32:253-8. doi: 10.1007/BF02784608. PMID: 1375062.
-

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T3 is the active hormone

- T3 binds to thyroid receptor much greater than T4
- Decrease T3 conversion is always accompanied by increased conversion to reverse t3

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Reverse T3

- RT3 - Reverse t3 – why does body make it.
- Proper levels of reverse T3 are needed for the brain for proper function and connectivity if too low or too high.
- Helps with differentiation of astrocytes.
- Activates cytoskeleton in brain.
- So you need at least 10 ng/dL over 20 ng/dL is starting to be too high, depending on the level of free T3.
- Excessive levels lead to weight gain hard to lose.

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TBG

- Thyroid function is Blocked
- If excessively bound to thyroid binding globulin
- Increased in ER alpha dominance, pregnancy, taking oral birth control pills, oral estrogen pills, thyroid replacement therapy, chronic sleep disturbances

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Elevated Antibodies

- Gluten, lectins, heavy metals, leaky gut
- Toxins that damage the gut lining +/- receptors
- Many EDCs attack 5-deiodinase enzyme

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Thyroid Receptor Health

- Too low of cortisol damages thyroid receptor response (cortisol rules T_e receptor density, elevator analogy)
- Sometimes need a bit of hydrocortisone to up-regulate thyroid receptor
- But Cytozyme AD acts best try first.
- EDCs inhibit thyroid binding to thyroid receptor

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Thyroid/Adrenal Best Buds

- Too low cortisol = too little thyroid receptors'
- Too high cortisol – tissue resistance to signals of thyroid
- Just right C means just right T

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Thyroid deficiency symptoms:

- Thinning outer 1/3rd eyebrows
- Thinning hair
- Cold hands and feet!
- Low body temp
- Dark circles/puffy eyes
- Dry skin
- Slow transit time, history of constipation
- Scalloped tongue (mild, moderate, severe)
- Achille's reflex time (photomotogram, thyroflex)

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Achille's reflex

- [Photomogram \(achilles reflex test\)](#). [No authors listed] West J Med. 1977 Aug;127(2):177. PMID: 18748025
- [Functional exploration of the thyroid in pregnancy by means of the photomogram](#). Zucchelli GP, Brunori De Luca I. Riv Ostet Ginecol. 1965 Sep;20(9):593-603. PMID: 5858944 Italian.
- [Ankle reflex photomogram in thyroid dysfunctions](#). Khurana AK, Sinha RS, Ghorai BK, Bihari N. J Assoc Physicians India. 1990 Mar;38(3):201-3. PMID: 2391297
- [The behavior of the Achilles reflex, as studied in the photomogram, in the picture of functional symptomatology of the thyroid gland. Contribution to its use in mass investigations](#). Zoli A, Brat A, Giardina A, Cotrozzi G. Riv Crit Clin Med. 1965 Jun;65(3):356-76. PMID: 5880433 Italian

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Thyroid symptoms cont.

- Wake up tired
- Lack of energy but improves as day continues
- Weight gain especially lower torso
- Memory loss
- Anxiety
- Insomnia
- Mood issues
- Elevated blood fats no matter how you eat
- Adrenal – energy crashes, thyroid tired much of the time.

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Thyroid a healthy body makes daily

- T4 (thyroxine): 100 mcg/day
- T3 (triiodothyronine): 30 mcg/day
- 20% produced by thyroid gland
- 80% by conversion of T4
- T3 4 times more potent than T4
- Reverse T3: 1% activity of active T3

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Synthroid not identical to your own thyroid hormone

- Acacia, confectioner's sugar (contains corn starch), lactose monohydrate, magnesium stearate, povidone, and talc.
- And then below this you'll see some of the color additives, which include FD&C Yellow No. 6 (in 25 mcg tablets), FD&C Red No. 40 and FD&C Blue No. 2 (in 75mcg strength), etc.
- And gluten. Not necessary to put on the label.
- Gluten can cross-react with corn and is grandfathered in a cheap adhesive.

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Cytomel

- **Cytomel** (liothyronine sodium). This is a brand of synthetic T3. The inactive ingredients consist of calcium sulfate, gelatin, starch, stearic acid, sucrose and talc.

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Armour

- This is a form of natural thyroid hormone that is derived from porcine thyroid glands. It consists of both T3 and T4, and many people do better when taking natural thyroid hormone when compared to synthetic thyroid hormone. However, some people react to the ingredients of Armour. The inactive ingredients include calcium stearate, dextrose, microcrystalline cellulose, sodium starch glycolate and opadry white.
- The FDA made the companies that make natural thyroids change their formulas and many are not as efficacious as they once were.

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Nature- Throid.

- is another form of natural thyroid hormone that is derived from porcine thyroid glands, and therefore also consists of both T3 and T4. The inactive ingredients include colloidal silicon dioxide, dicalcium phosphate, lactose monohydrate, magnesium stearate, microcrystalline cellulose, croscarmellose sodium, stearic acid, Opadry II

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Thyroid support: 2 of each BID +
Hormone Protect 2 BID
+ test iodine
3 main minerals: iodine, selenium,
zinc

- [Brain Res Bull.](#) 2001 May 15;55(2):309-12.
- **The distribution patterns of trace elements in the brain and**
- **erythrocytes in a rat experimental model of iodine deficiency.**



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Whenever you want "sustained" healthy signaling

- Sex steroids, vitamin D, T, adrenals, thyroid
- And even for those on prednisone, hydrocortisone
- And other medications that work better at sustained
- Levels throughout the day.

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