Soy, Cruciferous Vegetables, Coffee and Hashimoto's on Synthroid Medication

- Soy has been thought to interfere with the body's ability to absorb the medication. Yet there is no evidence that people with hypothyroidism should avoid soy completely
    - From Synthroid website:
        - Foods like soybean flour, cottonseed meal, walnuts, and dietary fiber may cause your body to absorb less SYNTHROID from the gastrointestinal tract. Grapefruit juice may cause your body to absorb less levothyroxine and may reduce its effect. Let your doctor know if you eat these foods, as your dose of SYNTHROID may need to be adjusted.
    - Generally best to wait 4 hours after taking thyroid medication to consume soy products due to it may impair the body's ability to absorb the thyroid medication
    - Research:
        - <u>Soy and Hashimoto's:</u>
        - Genistein is an isoflavone found in soy beans; it is a broad-spextrum tyrosine kinase inhibitor, and recent studies have demonstrated it's anti-inflammatory abilities in multiple diseases. Anti-inflammatory agents are important for those with Hashimoto thyroiditis (HT). Patients were randomizes into placebo or treatment receiving genistein of 600 mg/day as purified soy extract orally over 1 month. Thyroid indicators studied: TSH, T3, T4 and fT4.
            - Significant differences were observed; after 1 month the treatment group has T4 concentration increased and fT4 increased, T3 concentration remained the same and TSH decreased; this suggests improved thyroid function. Treatment group also had less TPOAb and TgAB which tested if genistein regulated the autoimmune condition in HT patients
            - Also tested cytokine levels and found genistein significantly changed Th1 producing cytokines→immune modulation effect of genistein on HT patients mediated through regulation of Th1 cells
            - Source: https://reader.elsevier.com/reader/sd/pii/S0171298516303916?token=FB7E63CB3A38EC0215205BB0608E9F330D4ECEAC9AF47E05223F7851D72CCB6419826029F2912403A86CA9C797D78FEB
        - Soy phytoestrogens suggested to impair thyroid function. Pharmacological doses of soy phytoestrogens were provided randomly to treatment subjects in either 66mg with 30 g soy protein or 0 mg and 30 g soy protein (placebo) and supplemented of r8 weeks.
            - Patients with subclinical hypothyroidism (TSH value between 4.8–10mU/L; reference range 0.5–4.7mU/L) with a free thyroxine (fT4)

within the reference range were recruited. Total of 44 participants, 22 in each group

- 2 patients progressed into overt hyp9othyriodism after high dose pharmacological doses of 66 mg of soy phytoestrogens and TSH, free thyroxine and triiodothyronine did not differ between groups
- Concluded: pharmacological doses of soy phytoestrogen at 66 mg did not increase overt thyroid function rate or alter thyroid function tests in patients with subclinical hypothyroidism

- The low-dose phytoestrogen preparation consisted of 30 g of soy protein concentrate (70% proteins) containing 2 mg of phytoestrogens, and the high-dose preparation contained 16 mg of phytoestrogens. Analysis showed the composition of the dose materials to be 54% genistein, 35% daidzein, and 12% glycitein as aglycones and further confirmed that 90% of phytoestrogens were in the primary glucoside form, with the remaining 10% as aglycones or acetyl and malonyl glucosides. The soy protein (Solcon F) and the phytoestrogens (Solgen 40) were supplied by Solbar Industries Ltd. (Ashdod, Israel) and prepared by Essential Nutrition, Ltd. (Brough, UK), who randomized the sachets
    - Source: Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6141627/
- This study showed that soy phytoestrogen supplementation at a level found in a vegetarian diet (16 mg) appeared to have a detrimental effect on thyroid status in patients with subclinical hypothyroidism, whereas phytoestrogens at a level equivalent to that seen in a normal Western diet (2 mg) did not.
    - Source: https://academic.oup.com/jcem/article/96/5/1442/2833679
- Soy and Synthroid:
- The American Thyroid Association does not recommend Synthroid be taken on an empty stomach, however guidelines indicate that absorption of levothyroxine may be influences by the presence of food and recommends it be taken consistently in time of day and presence or absence of food; dosage is adjusted if taking for food. Avoidance of soy and calcium is also recommended.
    - American Academy of Pediatrics and American Thyroid Association joint statement that avoidance of concomitant ingestion of soy, calcium, and iron should be avoided.
    - On the basis of the above review, the Drug and Therapeutics Committee of the Lawson Wilkins Pediatric Endocrine Society recommends that even though the absorption of levothyroxine on an empty stomach may be better than the absorption with or after meals, the more important aspect in the treatment of hypothyroidism is consistency in medication administration and regularity in the performance of thyroid function tests, followed by appropriate dose adjustment.

        - Source: https://www.jpeds.com/article/S0022-3476(10)00431-2/pdf
    - Soya interferes with thyroxine absorption, therefore if you are taking thyroxine you should try to avoid soya. If you wish to take soya, there should be as long a time interval as possible between eating the soya and taking the thyroxine.
    - There is evidence of certain brands of soya milk being withdrawn from sale by authorities in countries such as Ireland, Australia, New Zealand and Japan because they contained excessive amounts of iodine or being highly enriched with seaweed products that naturally contain iodine.
        - Source: http://www.btf-thyroid.org/information/108-thyroid-and-diet-factsheet
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- Cruciferous vegetables
    - Concern surrounding the impact of spinach, kale and other similar vegetables — including broccoli, broccoli rabe, turnips, Brussels sprouts, Chinese cabbage and cauliflower — on thyroid health is due to the effect they can have on the thyroid's ability to absorb iodine. Having enough iodine in your diet is crucial for thyroid health because your thyroid gland needs iodine to make T3 and T4.

    - It's true that eating a lot of these vegetables could limit your thyroid's uptake of iodine. The amount you would need to eat to have that effect, however, is very large — much larger than most people would ever normally eat and certainly far more than would be included in a daily smoothie.

    - In addition, the effect of these vegetables is on the thyroid gland itself. That means for someone like you whose thyroid gland isn't working properly, and who is taking thyroid hormone replacement medication, even if you ate these vegetables in large amounts, there wouldn't be any impact on the amount of thyroid hormone in your body.

    - It is worthwhile to note, though, some foods, dietary supplements and medications may interfere with your body's ability to process thyroid hormone replacement. For example, it can be hard for your body to absorb the medication if you take your tablets with meals that are high in fiber.

    - To help ensure that your body absorbs the medication properly, follow your health care provider's directions on how to take it — typically on an empty stomach.

- Also, to avoid problems with absorption, don't take your thyroid hormone medication with foods that contain walnuts, soybean flour or cottonseed meal. Don't take it at the same time as you take an iron supplement or a multivitamin that contains iron. It's also important to avoid taking it with calcium supplements or antacids that contain aluminum or magnesium. Some ulcer medications and some cholesterol-lowering drugs also can interfere with thyroid hormone replacement. To avoid potential problems, eat these foods or use these products several hours before or after you take your thyroid medication.

- Coffee: may decrease L-T4 absorption across drug compendia

    - Although lipid sequestration of L-T4 by coffee has not been elucidated, this may be a plausible mechanism for the interaction of both Italian coffee and American coffee.

Sources:

https://www.mayoclinic.org/diseases-conditions/hypothyroidism/expert-answers/hyperthyroidism/faq-20058188

https://www.synthroid.com/starting/taking-synthroid-the-right-way

https://newsnetwork.mayoclinic.org/discussion/mayo-clinic-q-and-a-hypothyroidism-spinach-and-kale/

https://jandonline.org/article/S2212-2672(16)00200-8/fulltext