

Module 5, Lesson 2 Handout:

Goitrogens

Goitrogens are substances that can disrupt normal thyroid function and contribute to thyroid disorders, an act by inhibiting iodine absorption by the thyroid. Some goitrogens also inhibit the synthesis of the thyroid hormones, T3 and T4, leading to increased levels of TSH. It's important to be aware of them so that you can help clients to better manage thyroid conditions and prevent disease. They're found in foods in the form of goitrins, thiocyanates and flavonoids.

Goitrins and thiocyanates are produced from glucosinolates, which are found in many cruciferous vegetables listed at the bottom of this handout. Foods such as cassava and sweet potatoes contain cyanogenic glucosides which are metabolized to thiocyanates. These compounds compete with iodine for absorption by the thyroid. Flavonoids are found in many foods such as tea, wine, fruit and legumes. The flavonoids that are found specifically in soy and millet impair thyroid peroxidase activity, an enzyme produced by the thyroid which stimulates production of T3 and T4.

Goitrogenic Foods

- Cruciferous vegetables (cabbage, kale, cauliflower, broccoli, brussels sprouts)
- Soy, millet
- Cassava, sweet potatoes

Goitrogens in these foods can also contribute to the development of goiters. A **goiter** is enlargement of the thyroid gland. This occurs due to the increased levels of TSH, which stimulate growth of the thyroid gland. Goiters can occur in clients with hypothyroidism, hyperthyroidism and even Graves' disease or Hashimoto's disease, autoimmune thyroid diseases that are outlined in detail in another handout. This abnormal growth of the thyroid gland is most commonly associated with iodine deficiency, which occurs in countries where the soil has low iodine content and dietary iodine is scarce (it isn't very prevalent in the U.S.). Goiters can also develop due to genetics, a thyroid injury or infection or tumors. Your client will either be under the care of their doctor or endocrinologist to diagnose a goiter, and further to determine the cause of the goiter if it is not known (e.g., hypothyroidism or hyperthyroidism) or you should refer your client if you suspect this is a concern.

Work with your clients who have existing thyroid issues to decrease the amount of goitrogens in their diet if you suspect that they are consuming too many and/or not getting enough iodine. For most clients, a normal amount of dietary goitrogens isn't going to be an issue, so continue to encourage consumption of those cruciferous vegetables that are packed with nutrients.