What is the Thyroid Gland?

Worksheet

The thyroid gland consists of follicular cells that produce T3 and T4 under TSH stimulation, and parafollicular (C) cells that secrete calcitonin to help lower blood calcium.

Questions

1. Which hormone is produced in the largest quantity by the thyroid?

A) T3
B) T4
C) Calcitonin
D) TSH

2. What stimulates the thyroid follicular cells to release hormone?

A) Calcitonin
B) TSH
C) Insulin
D) Cortisol

3. What do parafollicular (C) cells produce?

A) T4
B) T3
C) Calcitonin
D) TRH

4. Which structure joins the thyroid's two lobes?

A) Isthmus
B) Trachea
C) Larynx
D) Parathyroid

5. The healthy adult thyroid gland weighs about how much, and how many lobes does it have?

6. The thyroid secretes T4 and T3 in about a 20:1 ratio. If total daily hormone output equals 105 relative units, how many units are T4 vs T3?

7. Recommended daily iodine intake for adults is about 150 mcg. If someone consumes 3 servings of iodized salt each providing 40 mcg, do they meet the requirement?

8. Define: What are the two main hormones produced by thyroid follicular cells?

9. Define: What do parafollicular (C) cells secrete?

10. Define: What mineral is essential for thyroid hormone synthesis?

Answer Key

1. B) T4 - The thyroid secretes far more T4 than T3, roughly a 20:1 ratio; T4 is converted to the more active T3 peripherally.

2. B) TSH - TSH from the pituitary binds follicular cell receptors, triggering hormone release.

3. C) Calcitonin - C cells sit between follicles and secrete calcitonin, which lowers blood calcium.

4. A) Isthmus - The isthmus is the thin bridge of thyroid tissue anterior to the trachea connecting the lobes.

5. Normal weight 15-20 g Two lateral lobes connected by the isthmus Sits anterior to the trachea, below the larynx

6. Ratio T4:T3 20:1, so 21 parts total 105 21 = 5 units per part T4 = 20 5 = 100 units; T3 = 1 5 = 5 units

7. 3 40 mcg = 120 mcg 120 mcg < 150 mcg recommended They fall short by 30 mcg/day

8. Thyroxine (T4) and triiodothyronine (T3).

9. Calcitonin, which lowers blood calcium by inhibiting bone resorption.

10. Iodine - it's incorporated into thyroglobulin to form T3 and T4.