

- The lower level of calcitonin in the blood triggers the kidney to increase the rate of activation of vitamin D.
- Vitamin D acts on the gut to increase absorption of calcium from the diet.
- Blood calcium level is normalised and the mechanisms are shut off.

The reverse occurs if blood calcium rises:

- PTH production decreases and calcitonin production increases.
- Calcitonin acts on bone to decrease resorption of calcium.
- The low level of PTH causes increased renal excretion of calcium.
- The kidney produces less active vitamin D and so less calcium is absorbed from the intestines.
- Blood calcium level is normalised and the mechanisms shut off.

Adrenal Glands:

Paired glands which lie close to the cranial part of each kidney. Each adrenal gland has a cortex and a medulla. The two parts function separately.

Adrenal Cortex:

The hormones produced are known as steroids. There are three groups: Minerolocorticoids, Glucocorticoids, Adrenal sex hormones.

Minerolocorticoids:

The most important is aldosterone. This acts on the distal convoluted tubule of the kidney where it regulates acid base balance of plasma and extracellular fluid by the excretion of hydrogen ions. Aldosterone also maintains water balance in the body by regulating sodium and potassium. It controls the absorption of sodium by the kidney tubules.

Glucocorticoids:

Secretion is regulated by ACTH from the anterior pituitary gland. The hormones are called **corticosteroids**; The most important are **cortisol** and **corticosterone**. The level of these two hormones will increase with stress.

They have two main actions:

- They increase blood glucose levels by reducing the amount of glucose taken up by the cells in the body.
- This stimulates the conversion of amino acids to glucose in the liver (gluconeogenesis).
- When present in large quantities they suppress the inflammatory reaction, which delays healing and repair.
- This action is used therapeutically to reduce swelling.
- Over secretion of glucocorticoids - Leads to Cushing's disease.