

CHOLESTEROL

- Cholesterol is often called as animal sterol. The total body content of cholesterol is about 140 g in an adult man weighing 70 kg. i.e. around 2 g/kg body weight.
- Cholesterol is amphipathic in nature, it possesses both hydrophilic & hydrophobic region in the structure.
- About 1 g of cholesterol is synthesized per day in adult.
- Normal Concentration - 140-220 mg per 100 ml of blood. It increases with ages & also during pregnancy.

Biological significance of cholesterol in the body

- 1.) Structural component of cell membrane.
- 2.) It aids in the permeability of the cells.
- 3.) Precursor for the synthesis of all other steroids in body. (steroid hormones, vit D. & bile acids)
- 4.) Essential ingredient in the structure of lipoproteins. (transportation of lipid)
- 5.) Fatty acid are transported to liver as cholesteryl ester for oxidation.

Conversion of Cholesterol into Vitamin D

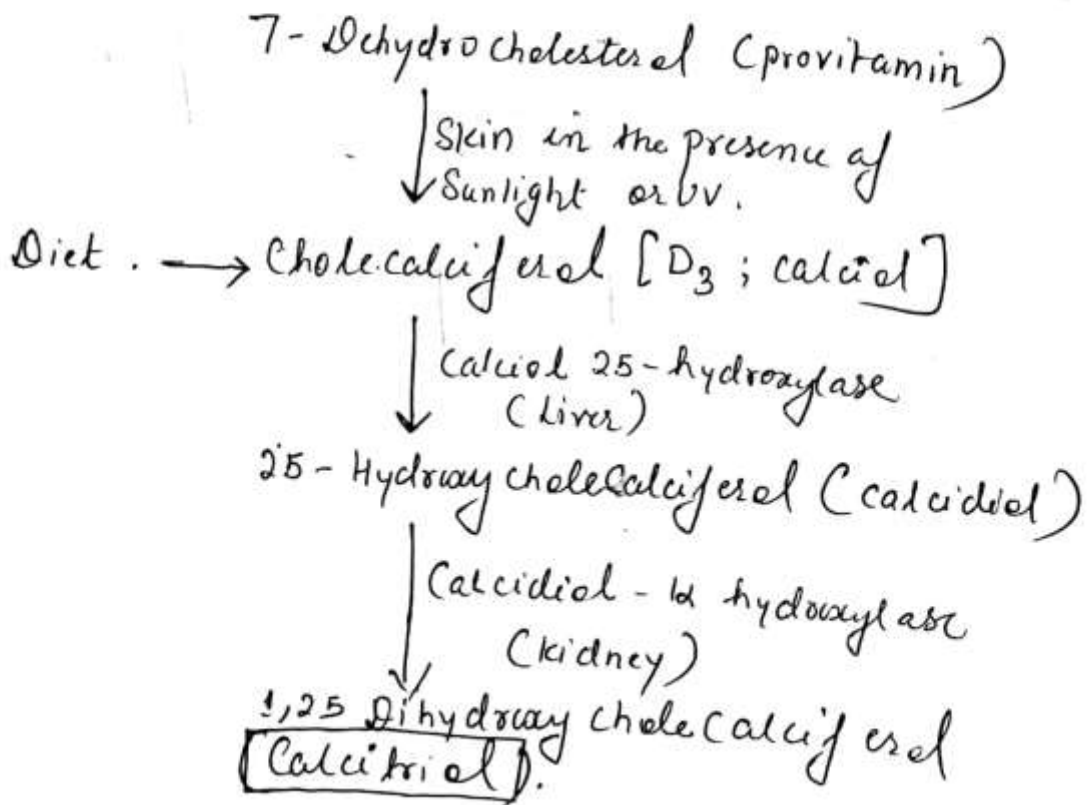
- Vitamin D is a fat soluble vitamin
- Steroids in structure
- Function like a hormone.

Biochemical function

1. Calcitriol is biologically active form of vitamin D.
Regulates the plasma levels of Calcium & phosphate
2. Increases the intestinal absorption of calcium & phosphate
3. Essential for Bone formation.

Biosynthesis of Active form of vitamin D (Calcitriol)

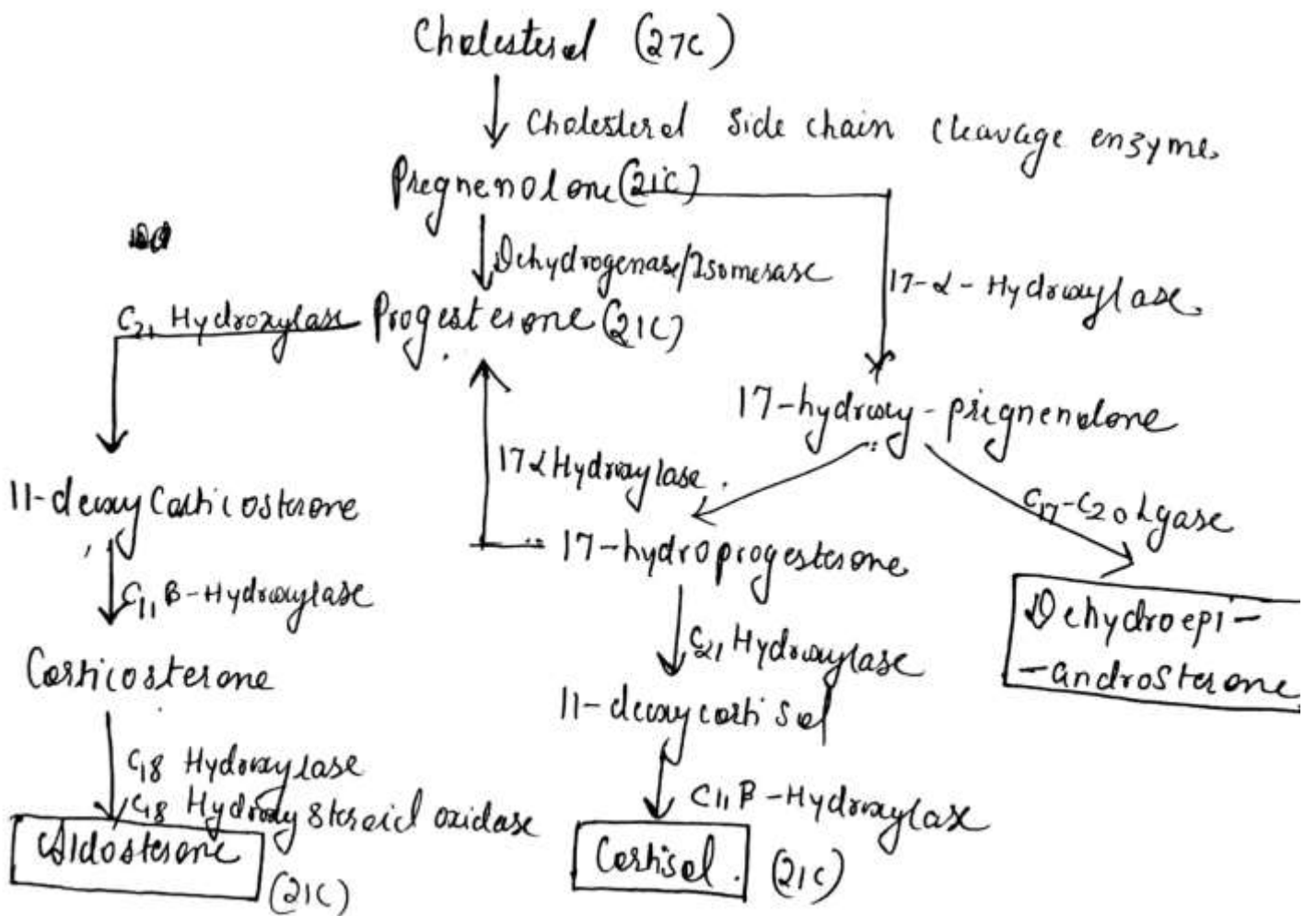
→ Synthesized in liver & kidney



Synthesis of steroid hormone from cholesterol

Five classes of steroid hormones are

- (a) Glucocorticoids (
- (b) Mineralocorticoids (aldosterone.)
- (c) Progestins (progesterone)
- (d) Androgens (e.g. Testosterone)



Conversion of Cholesterol into bile acids

- Bile acids serve as emulsifying agent in the intestine
- participate in the digestion & absorption of lipid
- Bile acids are amphipathic nature (Both polar & nonpolar)

Bile acid synthesis

