

Done By :

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Ⓢ The **most abundant** protein that constitutes about half of plasma proteins

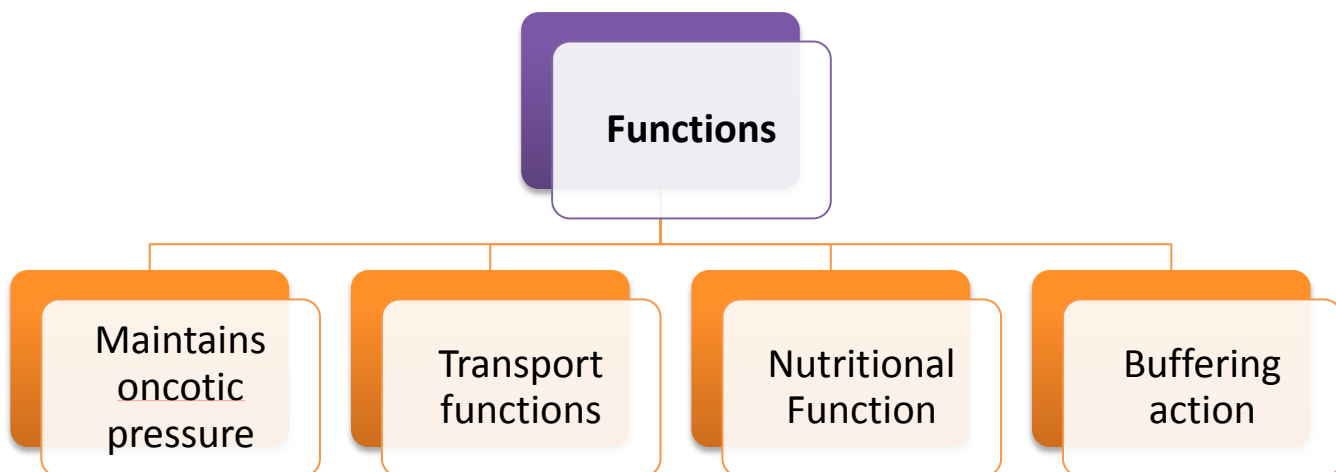
(3.5 – 5.0 g /dL)

Ⓢ A **soluble** protein with 67 kDa molecular mass (**carrier function**)

Ⓢ **Synthesized** in the liver as preproalbumin → (**big molecular**)

Ⓢ **Secreted** from the liver as albumin (**mature form**)

Ⓢ Half-life in plasma: **20 days**



Maintains oncotic pressure

- The osmotic pressure exerted by plasma proteins **that pulls water into the circulatory system**
- **80%** of plasma oncotic pressure is **maintained by albumin**
- Maintains fluid distribution **in** and **outside** cells and plasma volume
- Low albumin levels (**< 2 g/dL**) decrease the oncotic pressure causing edema

Transport

- Albumin is a **non-specific carrier** of many substances in blood:
 - Hormones (like steroid)
 - Calcium
 - Free fatty acids
 - Excretory products such as unconjugated bilirubin
 - Drugs and toxic substances
- Some substances are transported to the liver where they are metabolized for excretion

Hydrophobic

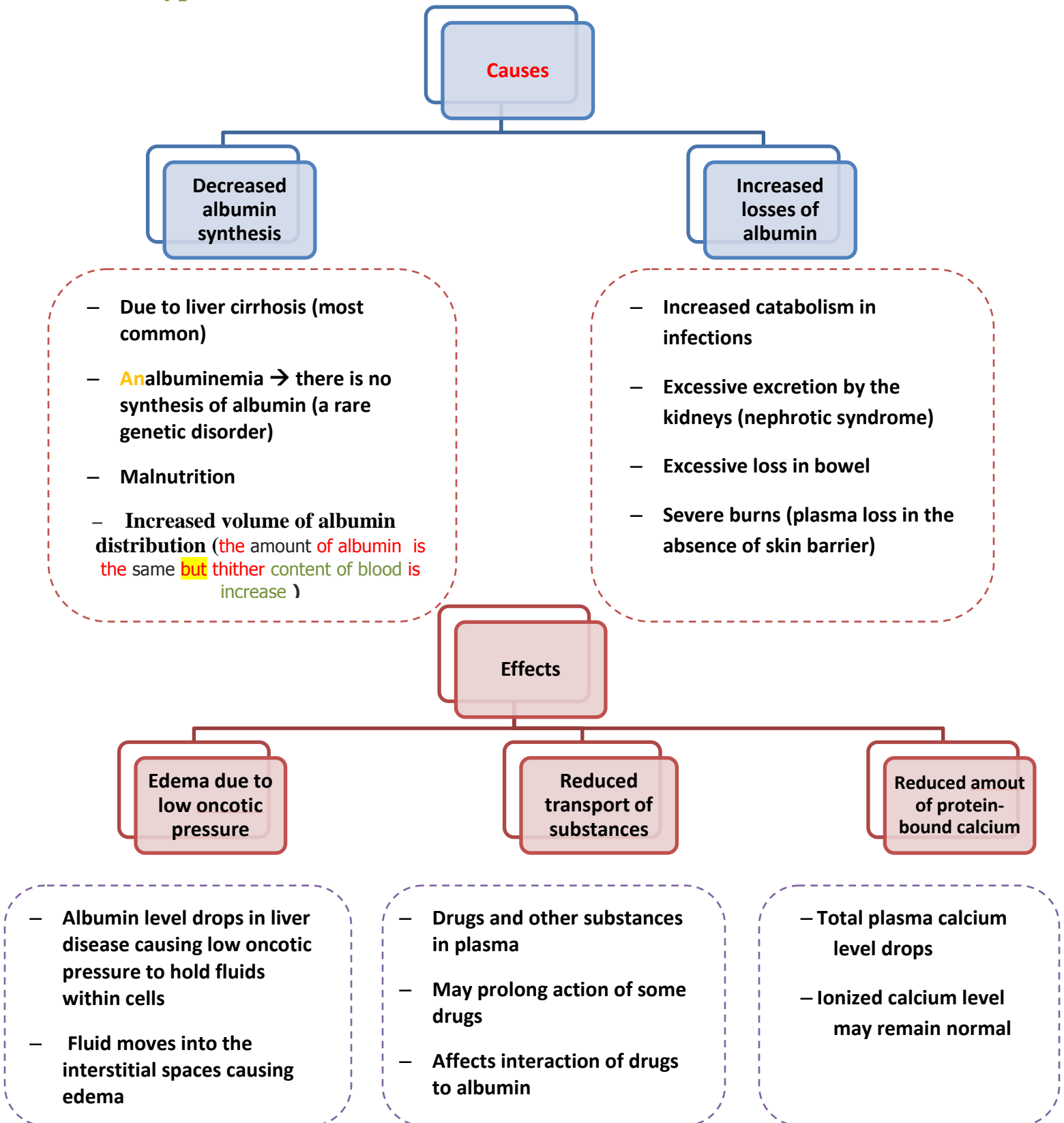
Buffering action

- Albumin has some buffering capacity in blood (**resist change in PH like : HCO_3^-**)
- **Not** a major protein (**the major protein buffer is hemoglobin but in general the HCO_3^-**)

Nutritional function

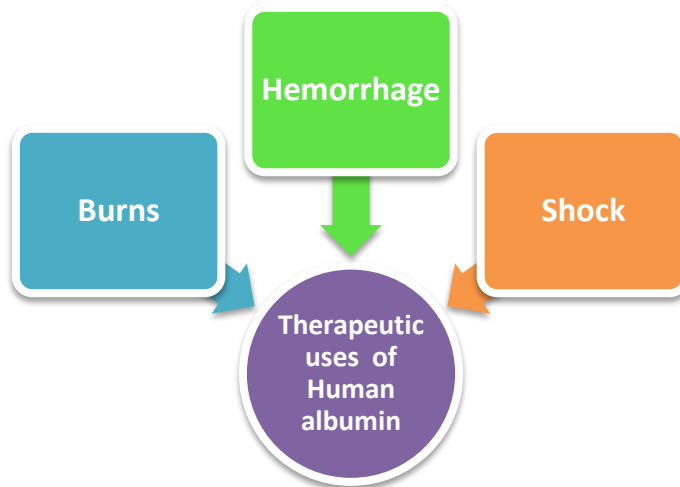
- Tissue cells can take up albumin by pinocytosis (**process by which membrane of certain cells can engulf droplets of fluid and make vesicle**) where it is hydrolyzed to amino acids
- May be considered a **source of essential amino acids** for cells
- Human albumin is **clinically useful** in treatment of liver diseases, hemorrhage, shock and burns

+ Hypoalbuminemia:



✚ Hyperalbuminemia:

- No clinical conditions are known that cause the liver to produce large amounts of albumin
- The only cause of hyperalbuminemia is **dehydration**



◆ Glycosylated/Glycated albumin in diabetics:

- Ⓢ Serum albumin may undergo slow non-enzymatic glycosylation (sugar molecule such as fructose or glucose bonding to a protein or lipid)
- Ⓢ Elevated glycosylated albumin is observed in patients with diabetes mellitus
- Ⓢ Glycosylation may alter the structure and function of albumin
- Ⓢ May result in the formation of end products with abnormal biological effects

