

Chapter - 6

Lymphatic System

- Network of tissues, organ & vessels that help to maintain the body's fluid balance & protect it from pathogens.
- Without it, neither the circulatory system nor the immune system would function.
- It helps the circulatory system to do its job.
- It consists of fluid derived from plasma (lymph) & white blood cells (especially lymphocytes and macrophages / or monocytes).
- The lymph travels in only one direction - it does not circulate.

Functions of Lymphatic System:-

1) Return fluid from tissues to Blood :-

85% of fluid that leak out of blood return to blood via blood capillaries approximately 15% return via lymph capillaries in 24 Hours.

② Return large molecules:-

→ 25-50% of blood proteins leak out of capillaries each day

- * They can not get back into capillaries.

- * Instead lymphatic capillaries pick them up and return them to the blood.

- * If lymphatics are blocked blood protein decreases (uses) leading to fluid.

- * imbalance in the body.

③ Absorb and Transport fats:-

Special lymphatic capillaries in villi of small intestine absorb all lipids and fat soluble vitamins from digested food bypasses liver much goes straight to adipose tissues.

④ Hemopoiesis :-

Some WBCs (lymphocytes, monocytes) are made in lymphatic tissues (not bone marrow), main supply of lymphocytes.

⑤ Body defense / Immunity :-

Lymphoid tissue is an imp. component of the immune system (form a diffuse

surveillance defense system in all body tissues and organs.

→ Lymphatic system screens body fluids and removes pathogens & damaged cells.

Lymphatic organ & tissues

① LYMPH

→ Lymph is a clear watery fluid that resembles blood plasma but has fewer proteins its composition varies depending on organ that it drains.

→ The lymphatic system handles 125 ml/hour (2500 - 2800 ml of lymph/day) and

② LYMPHATIC VESSELS

→ These are small lymphatic capillaries merge with others to form larger lymphatic vessels they resemble veins in structure:-

* Three layers but much thinner.

* Also has lymph nodes at intervals

* As they converge they become larger & larger.

③ LYMPHATIC DUCTS:-

→ A lymph duct is a great lymphatic vessel that empties lymph into one of the subclavian veins.

→ There are two lymph ducts in the body

② Right lymphatic duct

⑤ Thoracic duct.

④ LYMPH NODES :-

A small bean-shaped structure that is part of the body's immune system. Lymph nodes filter substances that travel through the lymphatic fluid, and they contain lymphocytes that help the body fight infection & disease.

→ Lymph nodes are located in many parts of the body, including

* Neck

* Armpit

* Chest

* abdomen

* groin.

④ Lymph organ:-

- a) Spleen
- b) Thymus
- c) Tonsils
- d) Appendix

a) Spleen:- An organ that is part of the lymphatic system.

- The spleen makes lymphocytes, filters the blood, stores blood cells, & destroys old blood cells.
- It is located on the left side of the abdomen near the stomach.

b) Thymus:- An organ that is part of the lymphatic ~~system~~ system, in which T-lymphocytes grow and multiply.

c) Tonsils:- These are located in the mouth and throat, on each side of pharynx, and will therefore destroy swallowed and inhaled antigens.

d) Appendix:- The location of the appendix is close to the junction of large intestine & the small intestine.

Composition of Lymph:-

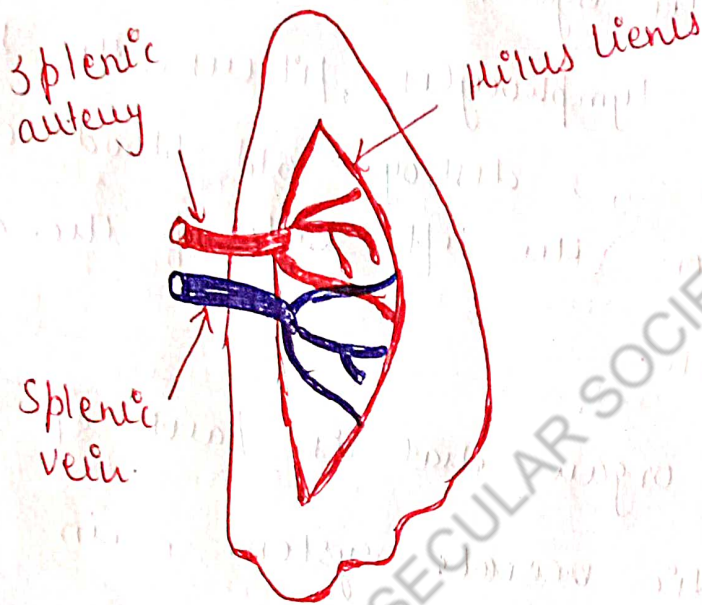
Water - 94%.

Solids - 6%.

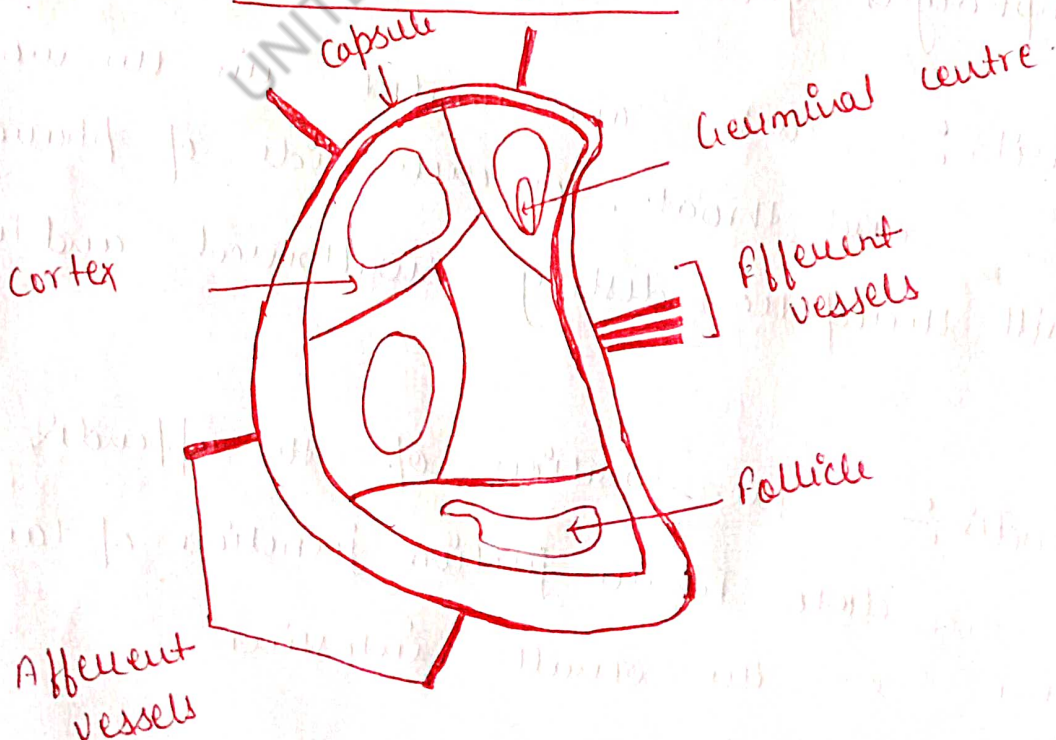
Plasma cells

Electrolytes

Clotting factors, plasma enzymes & antibiotics.



Structure of spleen



Structure of lymph nodes