

2026-27

D.PHARM 1ST YEAR

**HUMAN ANATOMY &
PHYSIOLOGY**

CHAPTER 7

PART 1

**LYMPHATIC
SYSTEM**

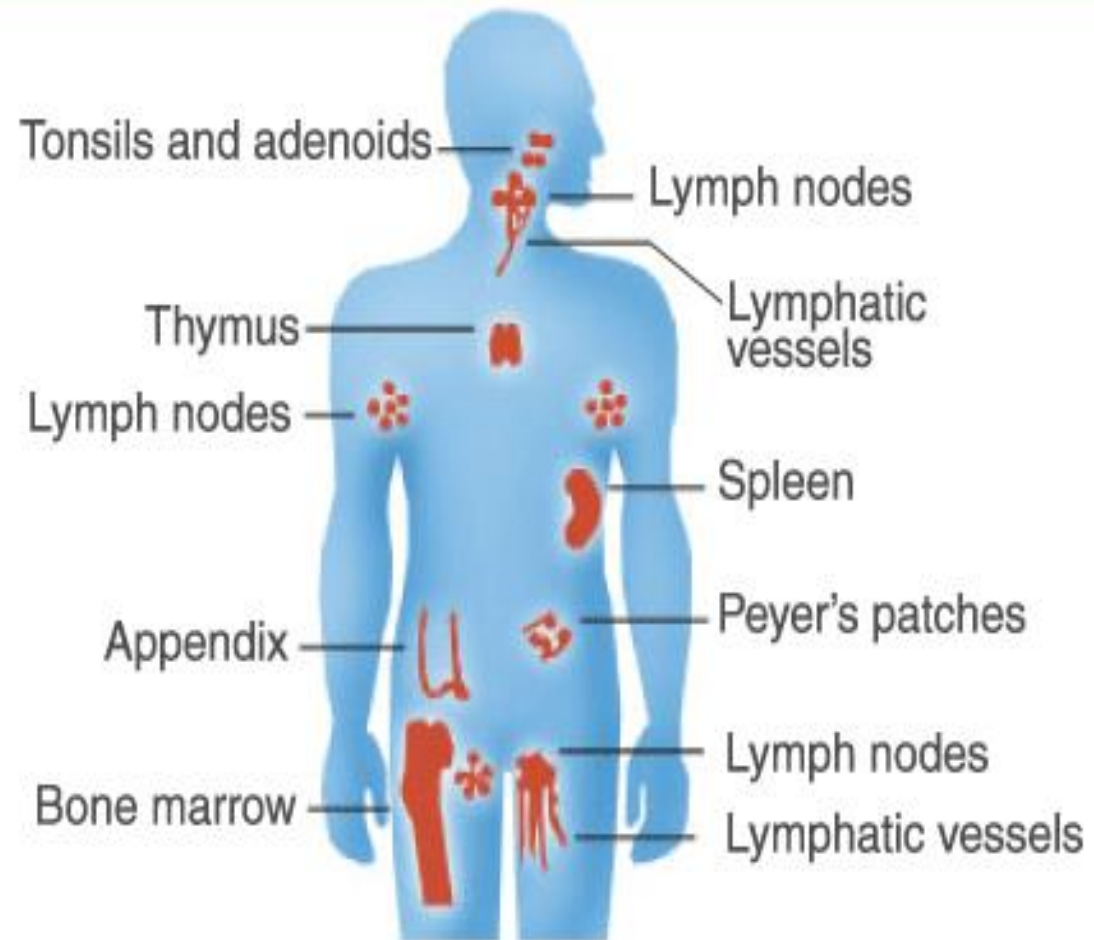


Lymphatic System



- The lymphatic system is a complex network of **tubes, tissues, and organs** that is a part of the circulatory system .
- It removes **extra fluid** and **waste** from tissues and deposits them in the bloodstream to support the body's fluid balance.

- It also provides the body with **disease-fighting lymphocytes**, which help in the **body's defense** against infection.
- The lymphatic system comprises **lymph nodes, open-ended vessels**, and organs like the **tonsils, spleen, and thymus**.



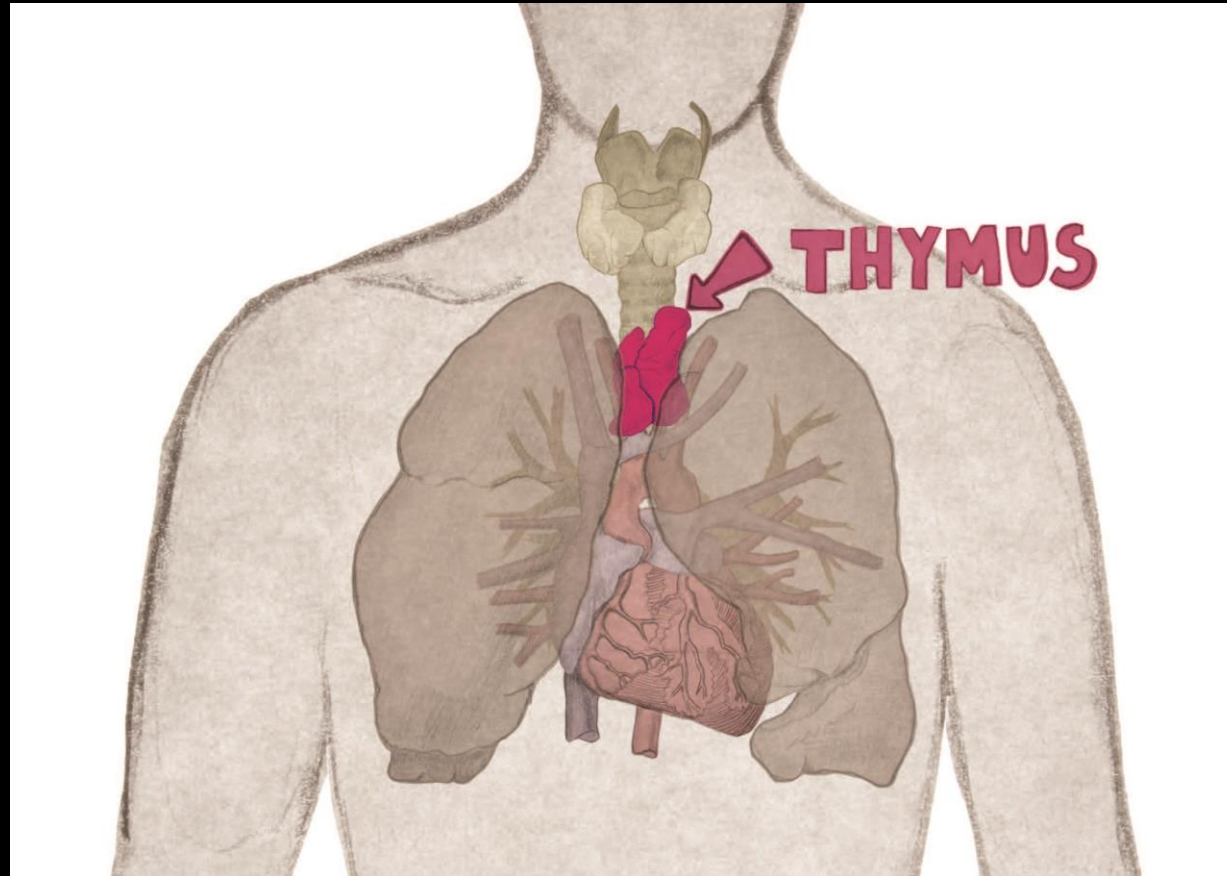
Primary Lymphoid Organs



□ Thymus

- The thymus is a **gland-like organ** that is situated at the **back** of the **heart** and **above** the **breastbone**.
- It is the site for the maturation of thymus cell lymphocytes, also known as **T cells**.

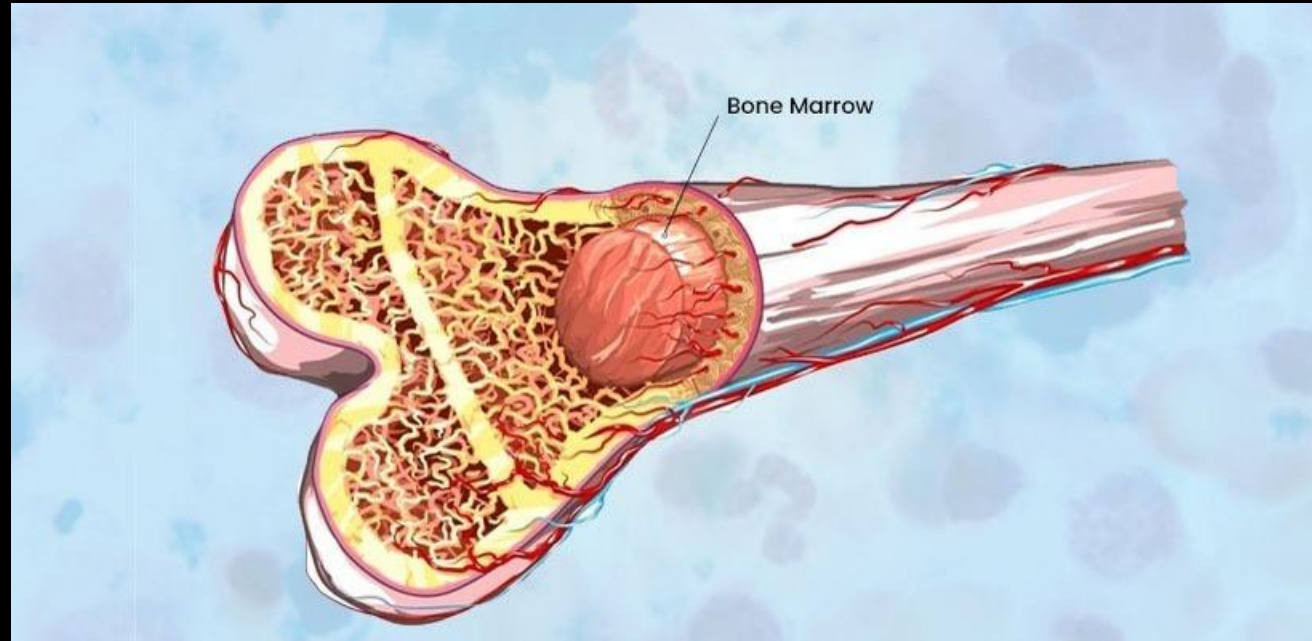
- This gland reaches its full maturity during childhood.
- As adulthood commences, it is replaced by **fatty or adipose tissue**.



❑ Bone Marrow

- It is the site for the production of precursors of T cells, and **production and maturation of B cells.**
- These cells are then transported to other organs and tissues via blood to carry out their function.

- **The red bone marrow** is found in abundance during the time of birth and it actively produces immune system cells, but over time, the red bone marrow converts to fatty tissues.
- In adults only the **pelvis, ribs** and **breastbone** have red bone marrow.



Secondary Lymphoid Organs

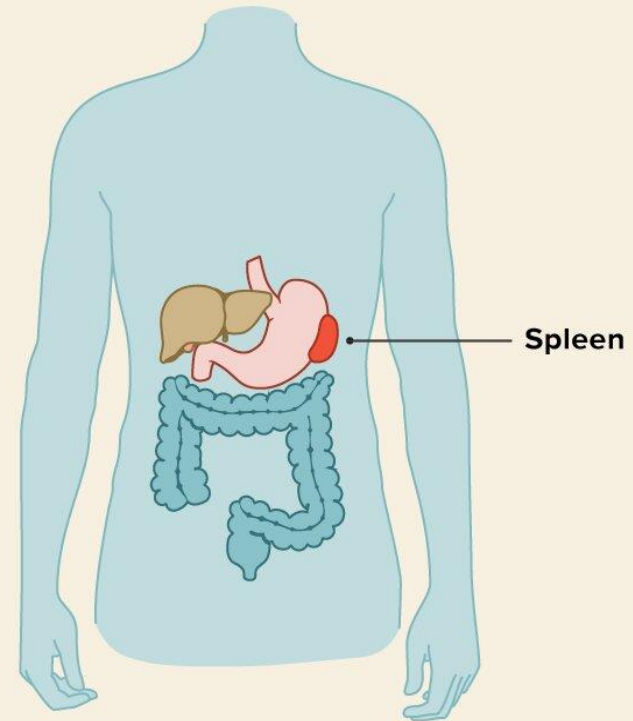


□ Spleen

- The spleen performs various kinds of functions such as:
- ❖ It houses different kinds of immune system cells such as **lymphocytes** and **phagocytes**.

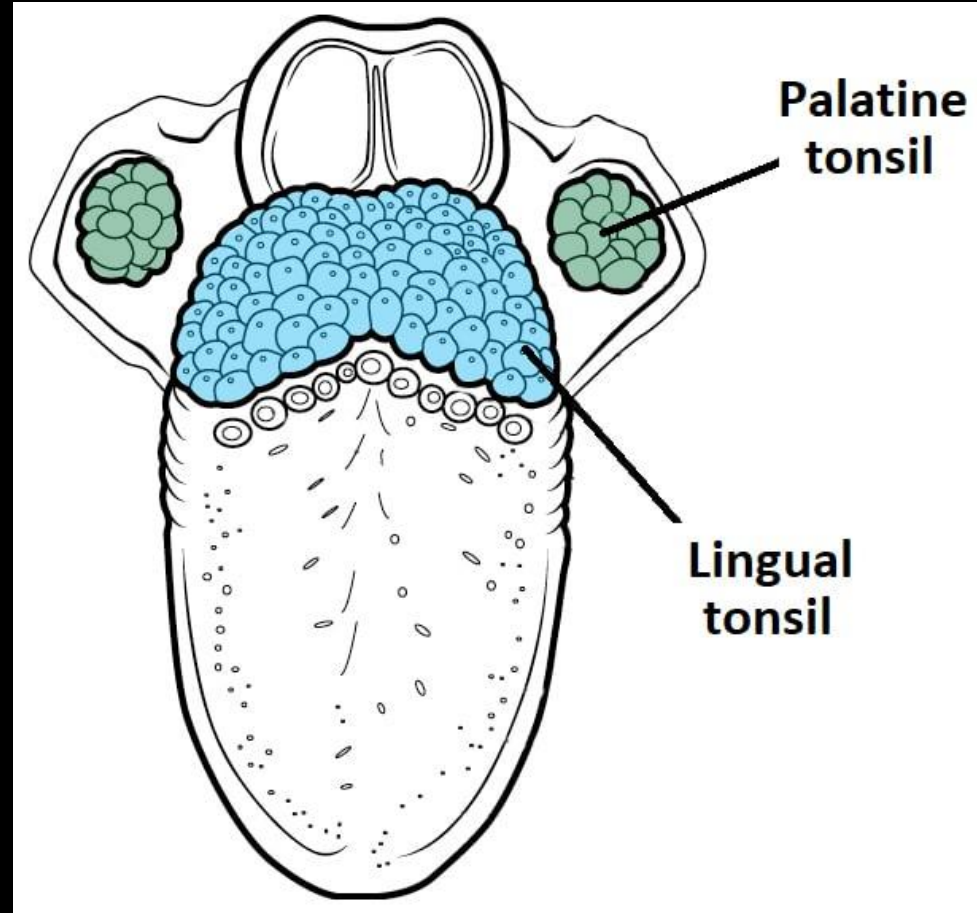
- ❖ In newborns, the spleen synthesises RBCs, but soon bone marrow takes over the process of **hematopoiesis**.
- ❖ It stores and breaks down platelets, which are important for **blood clotting**.

THE SPLEEN



□ Tonsils

- The tonsils that are located at the **throat region** form an important part of the immune system.
- They have **white blood cells** that help in fighting the germs.
- The location of the tonsil is such that it prevents germs from entering the mouth and nose.



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