

**Fig 3.1: Diagram of Simple Epithelium Tissue**

### Practical - 3

**Date:** .... / ..... / .....

**Aim:** To Study the Microscopic examination of Epithelial tissue by prepared slides.

**Reference:**.....

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**Requirement:**.....

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**Theory:**

**Tissue:** - Tissues are groups of cells that have a similar structure and act together to perform a specific function.

The branch of science that deals with the study of tissues is called as Histology.

**Types of Tissues:** -

1. Epithelial Tissue
2. Connective Tissue
3. Muscular Tissue
4. Nervous Tissue

**1. EPITHELIAL TISSUE**

It is made up of one or more layers of cells that provide covering or lining of body and cavities. It is classified as

- 1) Simple Epithelium
- 2) Pseudo stratified Epithelium
- 3) Compound Epithelium

**1) Simple epithelium tissue:** -

**a) Squamous epithelium:** - It is made up of single layer.

**Nature of cells:** Flat polygonal in surface view centrally located nucleus.

**Location :-** Lungs, Bowman's capsule, Henle's loop of kidney inner wall of blood vessels, smooth inner lining of heart, blood vessels, lymphatic vessels, lymph vessels as endothelium.

**Functions:** - Excretion, protection, secretion, absorption, filtration.

**b) Cuboidal epithelium:** - It's made up of single layer o cubical cells arranged on basement membrane.

**Nature of Cells:** - Cube like cells, polygonal in surface view and elongated Nucleus.

**Location:** - Stomach, small intestine, large intestine, Gall bladder.

**Functions:** - Secretion, absorption.

**c) Columnar epithelium:** - Made up of single layer of pillar shaped cells.

**Nature of Cells:** - Elongated cells, polygonal in surface view and elongated nucleus.

**Location:** - Stomach, small intestine, large intestine, Gall bladder.

**Function:** - Secretion, Absorption.

**Fig 3.2: Pseudo Stratified Epithelium Tissue**

**d) Ciliated epithelium:** - It's made up of single layer.

**Nature of Cells:** - The cells may be Cuboidal (or) columnar. The cells have hair like structures called cilia on its border (or) free surface area.

**The wave like movement of cilia propels the contents of the tube.**

**Location:** - a) Cuboidal ciliated- urinary tubules.

b) Columnar ciliated – Fallopian tube, Bronchioles.

c) Glandular epithelium: -It forms the lining of alveoli and portion of ducts in the glands. It's made up of cubical cells (or) short columnar cells (or) sometimes polyhedral cells.

**Functions:** - Secretion, lubrication, dilution of irritants.

**TYPES:**

**a) Exocrine gland:** - It may unicellular (or) multi cellular.

**i) Unicellular:** - eg; Gobbler cells.

**ii) Multi cellular:** - eg; Tabular glands- Ileum Secular gland – two types

**(i) Simple eg:** - Sebaceous gland

**(ii) Compound:** - eg; salivary gland.

**b) Endocrine gland:** - It's a ductless gland, sends secretion into blood by eg; Pituitary, pancreas, pineal etc.

**2) Pseudo stratified epithelium:** - The epithelium is named because it shows two incomplete layers of columnar cells.

In this tissue only one layer of cells are present all the cells touch the basement membrane but some short cells do not reach the surface.

This feature gives falls impression of multilayered appearance.

**Location:** - Large ducts of digestive glands, salivary glands and trachea.

**3) Compound epithelium:** - It consists of more than one layer of cells. It's divided into five types.

**I) Transitional epithelium.**

**II) Stratified squamous keratinized epithelium.**

**III) Stratified squamous non-keratinized**

**IV) Stratified columnar ciliated epithelium.**

**I) Transitional Epithelium:** - consists of three (or) four layers of cells and thereby it occupies inner-mediated position, between simple of compound epithelium.

The superficial layer is made up of large flat cells consists of two nuclei.

The second layer is made up of pyriform cells.

The next one (or) two layers are made up of polyhedral cells.

The cells are deforming capable without any disturbance to the function.

**Location:** - Pelvis of the kidney, urethra, urinary bladder upper part of the urethra.

**Fig 3.3: Compound Epithelium Tissue**

**II) Stratified Squamous Keratinized Epithelium:** - It is compound of many layers of cells.

**Nature of cells:** - The superficial layer of cells are flat type and horny, while deeper layer cells are polyhedral.

**Functions:** - Horny layers prevents the loss of water and mechanical injury.

**Location:** - Skin, nails, hair, palms.

**III) Stratified Squamous non- keratinized Epithelium:** - It is made up of several layers of cells. No keratinisation.

**Nature of cells:** - living squamous cells.

**Functions:** - provides moderate protection.

**Location:** - Buccal cavity, pharynx, oesophagus, cornes, vagina etc.

**IV) Stratified Columnar Epithelium:** -It is made up of many layers of polyhedral cells with superficial column type of cells.

**Nature of cells:** -Elongated or columnar.

**Location:** - Epiglottis, urethra, mammary gland, pharynx, fornix of conjunctiva.

**V) Stratified Columnar Ciliated Epithelium:** - The superficial layer is only columnar ciliated type of cells. The remaining layers are polyhedral cells.

**Location:** - Nasal surface of soft palate, some parts of larynx.

**Report:**.....  
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**Questions Bank**

1. Write the functions of Stratified Squamous Keratinized Epithelium tissue.
2. Which compound epithelium tissue occurs in the Pelvis of the kidney?
3. Which tissue cells may be Cuboidal or columnar and have hair like structures called cilia on its border surface area.
4. Columnar epithelium tissue cell consists of .....shaped cells.
5. Write the type of compound epithelium tissue.
6. Flat polygonal in surface view centrally located nucleus shows .....
7. Write the location of Pseudo stratified epithelium.
8. Horny layers prevent the loss of water and mechanical injury by which tissue?
9. Draw the structure of Glandular epithelium tissue.
10. Write the location of Stratified Columnar Ciliated Epithelium tissue.