**The Objectives**

**1-** **Distinguish endocrine from exocrine glands**

**2-Distinguish unicellular and multicellular glands**

**3- Recognize that multicellular glands are classified as either simple (single unit) or compound (multiple, branched units.**

**4- What are the types of secretory products?**

**5- Explain the mechanisms of secretion in glands?**

**Epithelial Secretion/Glands**

The major function in many epithelial cells is synthesis and secretion of specialized products; organs composed primarily of such epithelia are called glands.

**Classiﬁcation:** Glands are classiﬁed into two types on the basis of the ***site of secretion***. Exocrine glands secrete into a duct or onto a surface. Endocrine glands secrete into the bloodstream.

**1. Exocrine glands**

**a. Unicellular glands**: are composed of a single cell (e.g., goblet cells in tracheal epithelium).

**b. Multicellular glands**

(1) Multicellular glands are classiﬁed according to duct branching as (a) ***simple glands*** (duct does not branch) or ***compound glands*** (duct branches).

(b) They are further classiﬁed ***according to the shape of the secretory unit*** as acinar or alveolar (saclike or ﬂask like) or tubular (straight, coiled, or branched) Fig1.

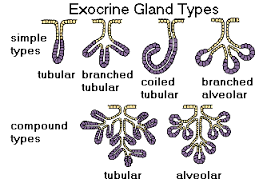
(2) A connective tissue capsule may surround the gland, or septa of connective tissue may divide the gland into lobes and smaller lobules.

**The type of secretory product of exocrine glands:**

(1) Mucus is a viscous material that usually protects or lubricates cell surfaces.

(2) Serous secretions are watery and often rich in enzymes.

(3) Mixed secretions contain both mucous and serous components.

Fig. 1 Types of Exocrine Gland

**Mechanisms of secretion :**

(a) Merocrine glands (e.g., parotid gland), the secretory cells release their contents by exocytosis.

(b) Apocrine glands (e.g., lactating mammary gland), part of the apical cytoplasm of the secretory cell is released along with the contents.

(c) Holocrine glands (e.g., sebaceous gland), the entire secretory cell along with its contents is released.

**2**. **Endocrine glands** may be unicellular (e.g., individual endocrine cells in gastrointestinal and respiratory epithelia) or multicellular (e.g., adrenal gland), and they lack a duct system. These glands that secrete their products through the basal lamina into the blood stream and lack a duct system. These glands often secrete hormones.

**MEDICAL APPLICATION**

* Both benign and malignant tumors can arise from most types of epithelial cells. Malignant tumors of epithelial origin are called carcinomas (Gr. karkinos, cancer + oma, tumor). Malignant tumors derived from glandular epithelial tissue are called adenocarcinomas (Gr. adenos, gland + karkinos). Adenocarcinomas are by far the most common tumors in adults after age 45.
* Some epithelial cells are prone to abnormal growth or dysplasia, which can progress to precancerous growth called neoplasia. Early neoplastic growth is often reversible and does not always result in cancer. Under certain abnormal conditions, one type of epithelial tissue may undergo transformation into another type in another reversible process called metaplasia. In heavy cigarette smokers, the ciliated pseudostratified epithelium lining the bronchi can be transformed into stratified squamous epithelium.

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