

EXPERIMENT-1

Aim: To study the integumentary and special senses using specimen, models, etc.

Theory:

The integumentary system is the largest organ of the body that forms a physical barrier between the external environment and the internal environment that it serves to protect and maintain.

To study the anatomy and physiology of human ear

The ear is an engineering marvel because its sensory receptors can transduce sound vibrations with amplitudes as small as the diameter of an atom of gold (03 nm) into electrical signals 1000 times faster than photoreceptors can respond to light. Besides receptors for sound waves, the ear also contains receptors for equilibrium.

EAR: The ear is divided into three main regions: (1) the external ear, which collects sound waves and channels them inward; (2) the middle ear, which conveys sound vibrations to the oval window, and (3) the internal ear, which houses the receptors for hearing and equilibrium.

1. The external (outer) ear consists of the auricle, external auditory canal and ear drum. The auricle (pinna) is a flap of elastic cartilage shaped like the flared end of a trumpet and covered by skin. The rim of the auricle is the helix; the inferior portion is the lobule. The external auditory canal is a curved tube about 2.5 cm in.) long that lies in the temporal bone and leads to the ear drum. The tympanic membrane or ear drum is a thin, semi-transparent partition between the external auditory canal and middle ear. Near the exterior opening, the external auditory canal contains a few hairs and specialized sweat glands called ceruminous glands that secrete ear wax or cerumen.

2. The middle ear is a small, air-filled cavity in the petrous portion of the temporal bone that is lined by epithelium. It is separated from the external ear by the tympanic membrane and from the internal ear by a thin bony partition that contains two small membrane covered openings: the oval window and the round window. Extending across the middle ear and attached to it by ligaments are the three smallest bones in the body. The bones, named for their shapes, are the malleus, incus and stapes. The incus is the middle bone in the series, articulates with the head of the stapes. The base or foot plate of the stapes fits into the oval window. Directly below the oval window is another opening, the round window, which is enclosed by a membrane, called the secondary tympanic membrane. The anterior wall of the middle ear contains an opening that leads directly into the auditory (pharyngotympanic) tube is commonly known as the eustachian tube.

3. The internal (inner) ear is also called the **labyrinth** because of its complicated series of canals. Structurally, it consists of two main divisions: an outer bony labyrinth that encloses an inner membranous labyrinth. The bony labyrinth is a series of cavities in the petrous portion of the temporal bone divided into three areas: the semicircular canals and the vestibule, both of which contains receptors for equilibrium, and the cochlea, which contains receptors for hearing.

The bony labyrinth is lined with periosteum and contains **perilymph**. This fluid, which is chemically **membranous labyrinth** is a series of epithelial sacs and tubes inside the bony labyrinth that have the same general form as the bony labyrinth. The epithelial membranous labyrinth contains endolymph.

Observation/ Result: In this experiment , We studied different parts present in human ear with the help of a chart or model.