Chapter

5

Demonstration of the Function of Olfactory Nerve

PRINCIPLE

Smell perception and adaption are controlled by the olfactory nerve (cranial nerve I). The process through which smell is perceived is outlined below:

- The olfactory impulse is transmitted through the olfactory nerve to the olfactory bulb in the frontal cerebral cortex.
- The olfactory receptors are located in the nasal epithelium in the superior section of the nasal cavity and are activated by various odorant stimuli.
- The impulse is carried by the olfactory bulb neurons along the olfactory tract to the limbic system, thalamus, and primary olfactory area of the temporal cortex.

The olfactory receptors sensitivity to an odor diminishes during continual stimulation.

Generally, a minute after being exposed to the odorant stimuli, total insensitivity to specific odors takes place. It follows a similar olfactory pathway to that previously mentioned.

APPARATUS REQUIRED

Peppermint oil, clove oil, alcohol, turpentine oil, etc.

PROCEDURE

a. Procedure of Demonstration of Smell Perception

- Ask the subject to sit comfortably and relax with both the eyes closed.
- Ask the subject to close his or her left nostril by squeezing.
- Place several drops of peppermint oil (or any other substance, e.g. clove oil, alcohol, turpentine oil, etc. with a strong, distinct odor) on a cotton swab.
- Hold the cotton swab under the subject's open right nostril (Fig.5.1).
- Ask the subject to inhale normally through his or her right nose in order to identify them but exhale through mouth.
- Request that the participant smell each of the test items through a different nostril.
- Use +/– sign in the observation table to record the result for various odorant's smell perception.
- Repeat the smell perception tests for peppermint and other odorants for the left nostril and record the results in the observation table.

b. Procedure of Demonstration of Smell Adaptation

- Ask the subject to sit comfortably and relax with both the eyes closed.
- Ask the subject to close his or her left nostril by squeezing.
- Place several drops of peppermint oil (or any other substance, e.g. clove oil, alcohol, turpentine oil, etc. with a strong, distinct odor) on a cotton swab.
- Hold the cotton swab under the subject's open right nostril (Fig. 5.1).

Fig. 5.1: Demonstration of the function of olfactory nerve

- Ask the subject to inhale normally through his or her right nose and ask the subject to inform you immediately when the smell of peppermint oil (or particular odorant which is used for the test) is significantly diminished or disappears.
- Olfactory adaptation will occur when the odor is significantly diminished or disappears.
- Record the time duration starting from holding the cotton swab under subject's nostril to the moment when adaptation completed and note the duration in the observation table.
- Repeat the smell adaptation tests for peppermint and other odorants for the left nostril and record the results in the observation table.

OBSERVATION

Subject's name : _____
Age : _____
Gender : _____

Observation Table for Smell Perception Test

Smell perception result	*Peppermint oil*	*Clove oil*	*Alcohol*	*Turpentine oil*
Right nostril				
Left nostril				

Observation Table for Smell Adaptation Test

Duration of smell adaptation (sec)	*Peppermint oil*	*Clove oil*	*Alcohol*	*Turpentine oil*
Right nostril				
Left nostril				

OBSERVATION EXERCISE