

The function of the smell – olfactometry

The sense of the smell allows to perceive and to differentiate the odours. Based on the emotions evoked by different odours they are classified to positive, negative or neutral. Smell receptors are *chemical receptors* and telereceptors. Adequate stimuli are odour molecules dispersed in the air. Final smell sensation is a result of a combination of different primary odours. Six primary odours are *classified according to Henning*: flowery, fruity, resinous, spicy, putrid and burned.

The method used to measure the function of the smell is called *olfactometry*. Clinically (in otorhinolaryngology, neurology) the function of the olfaction is tested by the standardized commercial smell test kits.

The purpose of the task is to verify the ability of the smell to determine basic odours (scents), to test the odour memory and to demonstrate the rapid adaptation of the receptors.

Material

Glycerine solutions of the six primary odours: jasmine oil (flowery odour), citric oil (fruity odour), turpentine oil (resinous odour), cinnamic oil (spicy odour), hydrosulphide (putrid odour), tar (burned odour) placed in well-sealed flasks.

Solutions are prepared in the laboratory in advance as the practical room has to be odour-neutral.

Procedure

1. Determination of the basic odours

Only one odour modality should be tested in one time. The subject inhales successively through each nostril, or simultaneously through both nostrils. The investigator opens the flask and let the tested person inhale. Afterthat, the flask should be rapidly and carefully closed. The procedure is repeated by other flasks until all six odours are tested.

2. Odour memory testing

The subject with tied (or closed) eyes inhales successively the content of all flasks. After identification write down the result and find out its accuracy.

3. Testing of the adaptation of the olfactory receptor

This part of the task is done last. Choose random flask and inhale the content until the sensation ceases. The olfactory stimulus is most intense at the beginning of the test and its intensity gradually decreases. The process is called adaptation.

Protocol

Write down the results. Find gender differences in evaluated parameters or differences between smokers and non-smokers.