

## STUDY OF REFLEX ARC

Automatic stereotyped responses to various types of stimuli enable animals to adjust quickly to adverse environmental changes. These automatic responses, generated by the nervous system are called reflexes. Reflexes that result in automatic regulation of body function can be either somatic or visceral. Somatic reflexes involve skeletal muscle responses and visceral reflexes involve the adjustment of smooth muscle, cardiac muscle and glands to stimuli. The neural pathway utilized in performing a reflex is called reflex arc. A reflex arc has five elements: receptor, afferent pathway, center, efferent pathway, and effector. The reflex arcs do not change throughout the life. Many reflexes are performed without being aware of them (respiratory, circulating reflexes, blink reflex).

**MATERIALS:** frog (1-2), frog board, dissection kit, stand with hook, filter paper, cotton, sulphuric acid sol. 0,5g% and 1g%, xylol, glass stick, gloves, needle.

### PROCEDURE:

When it is necessary spinal cord integrity it practices beheading/heading. Turtle is keeping with dorsal part in palm. Index finger catches mandible and one down. With scissors penetrate in the oral cavity and cut off along the cephalic end of a line of retro-eye (behind the eyeballs).

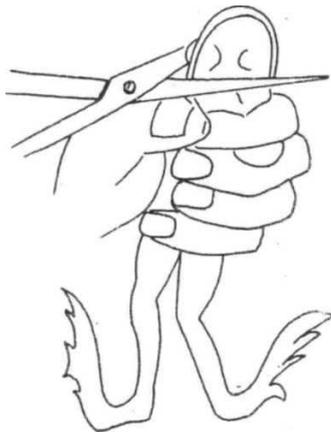


Figure 4

The frog is hung in the stand by introducing the hook through the mandibula of frog. A piece of filter paper soaked in sulphuric acid 0,5g% is applied on one of the posterior leg of frog. The reflex reaction is the withdrawal of leg. After that, the skin of the leg is removed and the frog is stimulated again with sulphuric acid 0,5g%, but no reaction occurs. (Because the receptor of this reflex is localized in skin, which was removed). On the skin of the other leg, a piece filter paper with sulphuric acid 1g% is applied. The stimulus being stronger, the reflex reaction involves both legs.

The sciatic nerve of the thigh with skin is isolated. Strip the skin off the right or left hind leg. With a sharp dissecting needle tear through the fascia and muscle tissue of the thigh to expose the sciatic nerve. Cotton soaked in xylol is applied under the nerve, using the stick. The leg is stimulated again. At the beginning there is a reaction, but after a couple a minutes no reaction can be seen, when sulphuric acid 0,5g% is applied. The stimulation should be performed at every one minute until the disappearance of response (withdrawal of the leg). Xylol is an anaesthetic substance which interrupts the nervous conduction of impulses and that's way no reaction occurs.

**INTERPRETATION:** an essential condition for carrying out the reflex is the integrity of reflex arc. Interruption of reflex arc in no matter point of its route leads to the disappearance of reflex.