**ELECTROOCULOGRAM (EOG)**

Recording of eye movements and eye position provided by the difference in electrical potential between two electrodes placed on the skin on either side of the eye. The EOG consists of two potentials: the standing potential (resting potential, dark phase, dark current) which is evoked by moving the eyes in the dark and originates from the retinal pigment epithelium and the light potential (light rise) which is evoked by moving the eyes in a lighted environment and originates from the photoreceptors. Clinically, the ratio between the light and dark potentials (sometimes also called the Arden index or Arden ratio) is assessed. If that ratio is less than 1.8 it indicates a malfunction of the structures from which the potential originates

The EOG was described and named by Elwin Marg in 1951. Clinical applications were described first by Geoffrey Arden in 1962, who realized that the most valuable information was the comparison of the amplitudes under light and dark-adapted states (the Arden ratio).

In the 1920's, it was discovered that by placing electrodes on the skin in the region of the eyes, one could record electrical activity which changed in synchrony with movements of the eye in the head. It was initially believed that these potentials reflected the action potentials in the muscles that are responsible for moving the eyes in the orbit.

This potential difference sets up an electrical field in the tissues surrounding the eye. As the eye rotates, the field vector rotates correspondingly. Therefore, eye movements can be detected by placing electrodes on the skin in the area of the head around the eyes. Vertical movements of the eyes are best measured by placing the electrodes on the lids, while horizontal eye movements can be best measured by placing the electrodes on the external canthi (the bone on the side of the eye).