

#### P-40 THE SIZE OF HORIZONTAL CELLS AND CONE PHOTORECEPTORS CHANGES DURING LIGHT- AND DARK-ADAPTATION OF TELOSTS RETINAS

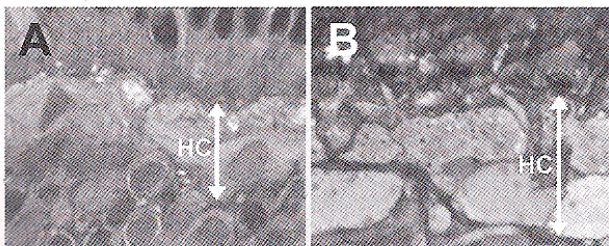
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**Introduction:** In teleost retinas, cone photoreceptors (CP) and horizontal cells (HC) show dramatic changes related to light and dark adaptation. Light induces cone contraction and invaginations of fingerlike protrusions (spinules) into cone pedicles from HC dendrites, whilst darkness causes the opposite to happen. The aim of this study is to determine changes in CP and HC cell size during adaptation to light and darkness.

**Methods:** The experiments were performed on three species of teleost (*Dicentrarchus labrax*, *Morone Americana*, and *Micropterus Salmoides*) belonging to the Perciform order. Fish were adapted to light and darkness (>1h), killed and their retinas processed for transmission electron microscopy. The area and thickness of HC bodies and the area of CP nuclei and pedicles from the light and dark-adapted retinas were calculated.

**Results:** In dark-adapted retinas, the HC size, is 30 to 40 % greater than in light-adapted retinas. On the other hand, the CP nuclei profile area is 20% larger in light-adapted retinas than in dark-adapted retinas. However, the cone pedicle profile area is greater in dark-adapted retinas. The maximal size of pedicles is reached after 60 minutes in darkness.



**Figure 1:** Semithin sections, from *Dicentrarchus labrax* retinas. Observe that in light-adapted retina (A), horizontal cell (HC) layer appear less thick than in dark-adapted one (B).

**Conclusions:** In the outer retina, the CP and HC size presents marked changes related to light and dark-adaptation in an inverse manner. In light adaptation, the size of the HC body and the cone pedicle decreases, whilst the CP nuclei size increases. During dark adaptation, the opposite occurs. These data can be considered as a new type of retinomotor movement, which is closely related to the other dramatic changes observed in teleost outer retinas.

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