



4097 NEUROCHEMICAL ANALYSIS OF RETINAL CELL TYPES IN PELOBATES FUSCUS

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Pelobates fuscus is a fossorial species, which is active mostly at night. Thus, it is often preyed on by some owl species. Vision may be an important aspect of selection. The connection between the toads activity and visual capabilities had not been studied and neither the structure of its retina. Hence our objective was to study the retinal structure and neurochemistry. Eyecups were made and after fixation we cut 15 micron thick cross section with cryostat and utilized indirect immunofluorescence to localize chemical markers known to be present in the retina of other anuran species. We used primary antibodies against calretinin, tyrosin-hydroxylase, serotonin, substance P, neuropeptid Y and somatostatin. Calretinin-like immunoreactivity was found in cones, many displaced bipolar- and orthotopic bipolar cells, a few but distinct amacrine cell types and in ganglion cells. Discrete immunoreactive bands were seen in all sublaminae of the inner plexiform layer (IPL). Strong tyrosine hydroxylase immunoreactivity was found in two types of large amacrine cells and in the first sublamina of the IPL. Similar cells were seen labeled with anti-serotonin antibodies except that their dendrites were distributed all over the IPL, but were especially strongly present in the 2nd and 3rd sublaminae. Substance P-immunoreactivity was seen in at least two, possibly three types of amacrine cells, the dendrites of which were distributed in sublamina 1, 3/4 and 5. Our most interesting findings are related to NPY-positivity. We have observed two, possibly three types of large amacrine cells, with dendrites distributed in sublaminae 1 and 3. Many strongly immunopositive centrifugal fibres were seen in sublamina 1. Müller cells were also weakly immunoreactive. Somatostatin immunoreactivity was not observed in any cell or fiber in the retina. Our results indicate that there are only minor differences between Pelobates and other anuran species regarding retinal structure.