

Grouped, stacked rods and tapeta lucida in the retina of Japanese anchovy *Engraulis japonicus*

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Abstract

ABSTRACT: Morphology of the photoreceptor cells and tapetum of the Japanese anchovy *Engraulis japonicus* was studied by histologically and by chemical analysis. The Japanese anchovy has a duplex retina. The cones form parallel rows consisting of alternately placed long cones and bifid cones. Both types of cones are intimately associated and form triple units that are regularly spaced along the row of cones. The rods are grouped and stacked. This fish has a retinal tapetum lucidum composed of guanine and hypoxanthine. Three structures of the tapetum lucidum were recognized: platelet, diamond and rod types. Photomechanical changes include movements of the photoreceptor cells and the retinal tapetum. The retina of the Japanese anchovy is thought to be highly sensitive and well adapted to a dim light environment.

KEYWORDS

dim light • grouped and stacked rods • Japanese anchovy • retina • retinal tapetum