



POSTER ABSTRACT

Localization of Vanilloid Receptors in Mammalian Retina via Immunocytochemical Staining and Digital Acquisition

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Vanilloid receptor1 (VR1), sensitive to the active ingredient in chili peppers (capsaicin), is found in the central nervous system and participates in pain perception. VR1 forms a complimentary receptor group with cannabinoid receptors. Both receptors are sensitive to the endocannabinoid, anandamide, which appears to affect visual sensitivity. Immunocytochemical and fluorescence techniques were used to localize VR1 in the rat and mouse retinas. VR1 was restricted to a type of large amacrine cell in both species.

Double-labeling showed that this VR1 amacrine cell contained the dopamine synthesizing enzyme and the cannabinoid degradative enzyme. The colocalization of these labels in a single type of retinal interneuron suggests a complex interaction among the dopamine, cannabinoid and vanilloid neuromodulators. Dopamine likely serves to decrease retinal sensitivity to light whereas cannabinoids may increase light sensitivity. In other parts of the nervous system, VR1 is excitatory and in the retina may modulate dopamine release.