**L-CIS-DILTIAZEM MODULATES PHOTOPHOBIC RESPONSE AND BLOCKS THE CGMP-GATED CHANNELS IN STENTOR COERULEUS**

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*Stentor coeruleus* is a protozoan ciliate exhibiting a distinct photophobic response when exposed to an increase in light intensity. This light avoiding response of the cell consists of a delayed stop of forward swimming, and a period of ciliary reversal resulting in the cell swimming backward. After the subsequent stop of backward swimming, the organism renews its forward swimming, usually in a new direction. An alteration of cell movement is mediated by a depolarizing photoreceptor potential, which triggers an action potential coupled in turn, as in other ciliates, to the ciliary reversal. Microscope video recordings and macrophotographic methods showed that l-cis-diltiazem, a specific blocker of the activity of cGMP-gated channels, significantly modulates the cell photomotility. The incubation of cells in medium containing l-cis-diltiazem results in an increase of their sensitivity to light stimulation. This is evidenced by the progressive increase in the number of photoresponding cells, the shorter response latency time and the prolongation of the ciliary reversal duration with the increasing concentration of the drug. In dark-adapted cells, an application of l-cis-diltiazem at higher concentrations mimics the effect of light stimulation showing motile responses similar to those of the photophobic responses. The effect of l-cis-diltiazem on the activity of ion single-channels was also examined by the patch-clamp technique in a liposome membrane comprising the cortex fraction obtained from *Stentor coeruleus*. An application of cGMP at micromolar or cAMP at milimolar concentrations to the membrane patches results in the appearance of distinct channel activity. The typical conductance of the membrane single-channel in symmetric 250 mM KCl solution equals about 30 pS, and was reversibly reduced in a dose-dependent manner by micromolar concentrations of the applied inhibitor. The basic properties of these channels in *Stentor coeruleus* indicate a high similarity to those already described for the cGMP-gated ion channels in different receptor cells of other organisms. These behavioral and electrophysiological data clearly indicate that the cGMP-gated ion channels have an important role in the light signal transduction pathway in the protozoan cell.