Foldscope - The Origami Paper Microscope magnifies your curiosity: as a research tool in toxicology studies using *Paramecium caudatum*

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Abstract

The Foldscope, a portable optical microscope made mostly out of paper and a small spherical glass lens, magnifies the wonders of the microscopic world replacing conventional microscopes. Once assembled, that provides magnification from 140X to 2000X. In the present studies foldscope was utilized to study the acute cytotoxic affects of cypermethrin on *Paramecium caudatum*. In acute toxicity, a sudden change in mobility of organisms was recorded at 8ppm of concentration. In few seconds, with rocking movements cells aggregated around the corners of cavity block. The shape, size and length of Paramecia were changed and reduced prominently. The ciliates showed necrotic cell death with typical features like blackening of cytoplasm, blebbing and leaking of internal contents. Significant changes in phagocytosis and contractile vacuole activity were also observed in concentration dependent manner. The present findings highlight the use of foldscope as a research tool in basic toxicological observations with *Paramecium caudatum* as a model organism.

Key words: Foldscope, *Paramecium caudatum*, Low cost, Cypermethrin, Necrotic cell death.