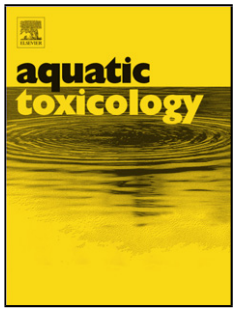

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Interaction between the zebrafish (*Danio rerio*) organic cation transporter 1 (Oct1) and endo- and xenobiotics

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Highlights

- The first functional characterization of a fish organic cation transporter
- Homology model reveals basic structural properties of the zebrafish Oct1 which is structurally similar to human and mammalian orthologs
- Highly complex OCT/Oct active region indicates its polyspecific nature
- Five new fluorescent substrates of Oct1 were identified: ASP+, rhodamine 123, berberine, DAPI, ethidium bromide
- Interaction studies with model substrates and cells stably expressing zebrafish Oct1 reveal high number of diverse endo- and xenobiotic interactors
- Cytotoxicity modulation experiments indicate that zebrafish Oct1 may have a defensive role similar to human orthologs.

ABSTRACT

Organic cation transporters (OCTs) serve as uptake transporters of numerous endo- and xenobiotics. They have been in the focus of medical toxicological research for more than a decade due to their key role in absorption, distribution, metabolism and excretion due to their expression on basolateral membranes of various barrier tissues. OCTs belong to the SLC22A family within the SLC (Solute carrier) protein superfamily, with three co-orthologs identified in humans (OCT1, 2 and 3), and two Oct