

Abstract

Ecotoxicological Tools to Assess Cytostatic Effects in Freshwater Environments: Aiding Drug Prioritization [†]

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Abstract: Given the growing number of cancer diseases, new cytostatic drugs are approved daily, often with concomitant development, or refinement of some of these drugs aimed at decreasing patient discomfort during the administration period (e.g., prodrugs). Classified as highly toxic, they represent a major environmental problem that may potentiate disease occurrences. For newer cytostatic and prodrugs there are no (or few) reported effects to aquatic organisms; therefore, their prioritization is constrained. In light of the points raised, the IonCytDevice project intended to bridge some of these knowledge gaps and has delivered important benchmarks. Predictions have been obtained on the environmental impacts of three cytostatics (cyclophosphamide: CYP; 5-fluorouracil: 5-FU; and mycophenolic acid: MPA) and one prodrug (capecitabine: CAP) on freshwater biota, with a focus on new species and endpoints likely to be also framed in meta-analysis studies. The results reveal that, for now, CYP, 5-FU, and CAP (prodrug) pose no risk, whilst MPA was flagged as a high environmental risk.

Keywords: antineoplastics; cancer; zebrafish; hydra; algae



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