

Globaqua-Cytothreat-
Endetech-Scarce
Workshop

PHARMACEUTICALS IN WASTEWATERS AND
SURFACE WATERS UNDER
MULTISTRESSORS
SITUATION:
Fate, Adverse effects,
Risks and Removal Technologies

2nd-3rd December 2014
Barcelona, Spain



GLOBAQUA



GOBIERNO
DE ESPAÑA

MINISTERIO
DE ECONOMÍA
Y COMPETITIVIDAD

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Impact of *in vivo* and *in vitro* exposure to 5-fluorouracil, cisplatin, etoposide and vincristine sulphate on dna damage in haemocytes of freshwater mussels *Unio pictorum* AND *Unio tumidus*

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The impact of 5-Fluorouracil (5-FU), Cisplatin (CP), Etoposide (Eto) and Vincristine sulphate (Vin) on DNA damage level was studied *in vivo* and *in vitro* on haemocytes of freshwater mussels *Unio pictorum* and *U. tumidus* using alkaline comet assay. For *in vitro* experiments, two different approaches were applied: i) isolated haemocytes were treated for 30 min in physiological solution, ii) primary culture of haemocytes was treated for 22h. For *in vivo* experiments, mussels were exposed in static system for 72h. CdCl₂ was used as positive control. The level of DNA damage was analyzed by Comet Assay IV software. CdCl₂ induced significant increase in DNA damage *in vitro* and *in vivo*.

Treatments *in vivo* with 5-FU, Eto and Vin resulted in significant increase of DNA damage. Genotoxic potential was also detected *in vitro* for Vin after 30 min of exposure, and Eto after 22h. CP did not induced increase of DNA damage *in vivo* or *in vitro*, but post treatment with hydrogen peroxide indicated existence of DNA crosslinks.

Lack of genotoxic effects of cytostatics in isolated haemocytes can be attributed to short period of exposure (30 min), while the lack of the effects in primary cultures can be assigned to the mechanisms of action of these drugs.

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