

Exposure of *Artemia salina* to glyphosate and bioremediation by isotherapy

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Introduction: *Artemia salina*, an ecotoxicity bioindicator, is a microcrustacean belonging to the order Anostraca. Glyphosate is an herbicide widely used to control weeds. However, its intoxication can cause serious damage to human health and the balance of the environment, given its effects as an endocrine disruptor. **Objective:** verify the possible protection of the artemia exposed to glyphosate by the addition of its isotherapeutic into water, by means of the evaluation of the behavioral and morphological features of nauplii and of the physical properties of remedies and treated water, to elucidate the involved mechanisms. **Methods:** *Artemia salina* cysts were kept in culture bottles containing artificial sea water containing glyphosate at LC 10 (lethal concentration 10%), to promote hatching within 48 hours. The isotherapeutic preparations were inserted in each bottle in a 10% of the total water volume. Part of the nauplii was distributed in transparent tubes, being 10 nauplii per tube and 6 tubes per group, for behavioral analysis, and part were collected for a detailed morphological analysis, under an optical microscope. About 80 to 270 nauplii were analyzed per group. The reserved water was divided into aliquots for physicochemical analysis, that is, evaluation of the water dipole behavior by Cartwright's method. **Results:** Gly 6cH presented selective effects on nauplii hatching ($p=0.02$) and on defected/healthy ratio ($p=0.001$), representing some protective action. This result was dependent of the salinity of water and presented correspondence with the effects on solvatochromic dyes, indicating that charges and ions can be critical factors involved in the mechanism of action. We concluded that the use of isotherapeutics could be a plausible tool to reduce the environmental impact of the indiscriminate use of glyphosate, since these results can be reproduced in further studies.

Keywords: *Artemia salina*, glyphosate, isotherapeutic, homeopathy, eco-toxicity

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