

عنوان مقاله:

Effect of Salinity and pH Changes on the Toxicity of Abamectin in *Artemia franciscana* using Response Surface Methodology

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خلاصه مقاله:

The excessive increase in pesticides consumption has made concerns about aquatic ecosystems. Hence, the present study focused on the toxicity level of Abamectin as a widely used pesticide in *Artemia franciscana*. The lethality of Abamectin at different pHs and salinity was investigated to simulate the real natural status of *A. franciscana*. The salinity ranges of ۱۰-۲۵۵ and ۱۰-۱۳۰ g.l^{-۱} with the pH range of ۴-۱۱ for water with a constant Lethal concentration ۵۰ (LC_{۵۰}) (۰.۱۴۵ μg.l^{-۱} from the toxicity test) were considered and evaluated using response surface methodology (RSM). A significant variation in *Artemia* mortality was observed at ۰.۱۴۵ μg.l^{-۱} of Abamectin in the salinity ranges of ۱۰-۲۵۵ g.l^{-۱}, irrespective of the effect of pH. In the second phase of the experiment, a significant variation of mortality was observed in the level of LC_{۵۰} in the salinity range of ۱۰-۱۳۰ g.l^{-۱}, which was associated with pH shifts ($p < ۰.۰۵$). In addition, R_Y adjusted, and predicted R_Y of the model were equal to ۰.۹۸۵, ۰.۹۷۶, and ۰.۹۶, respectively. The reduction in the pH from ۷.۵ and the salinity from ۳۰ g.l^{-۱} intensified the lethal effects of Abamectin. The simultaneous increase in pH and salinity decreased the mortality level. Also, the increase in salinity raised the mortality rate. These findings may reflect the stressor effects induced by the change of physicochemical parameters on the tolerance of *A. franciscana*,s in confronting pollution exposure. Hence, it can be concluded that a severe decrement in salinity and pH .can intensify the LC_{۵۰}, which exerts an adverse impact on osmoregulation and high energy demand

کلمات کلیدی:

Abamectin, *Artemia franciscana*, Central composite design, Osmoregulation, Toxicity

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