



“Gheorghe Asachi” Technical University of Iasi, Romania



PHYTOTOXICITY OF THE AQUEOUS SOLUTIONS OF SOME SYNTHETIC SURFACTANT-CONTAINING DISHWASHING LIQUIDS WITH AND WITHOUT PHOSPHATES

Nataliia Tkachuk^{1*}, Liubov Zelena^{2,3}, Oleksandr Fedun¹

¹Department of Biology of the T.H. Shevchenko National University “Chernihiv Colehium”,
53 Getman Polubotok Street, Chernihiv, 14013, Ukraine

²Department of Physiology of Industrial Microorganisms of the Danylo Zabolotny Institute of Microbiology and Virology, NAS of
Ukraine, 154 Acad. Zabolotny Street, Kyiv, 03143, Ukraine

³Department of Biotechnology, Leather and Fur of the Kyiv National University of Technologies and Design, 2 Nemyrovycha-
Danchenka Street, Kyiv, 01011, Ukraine

Abstract

The use of synthetic detergents, which include dishwashing detergents, is one of the dangerous factors of environmental pollution. The aim of this study was to investigate evaluate the toxicity of aqueous solutions of surfactant-containing dishwashing detergents according to in accordance with the phytotest using garden cress (*Lepidium sativum* L.) as a test plant. Dishwashing detergents widespread and purchased in the Ukrainian trading network were investigated as toxicants-water pollutants. The estimation of pollution level was performed on the basis of the characteristics: seed germination energy, seed germination and biometric-morphometric parameters (length of aboveground part and roots of seedlings) with the following statistical analysis. It is having been shown that increasing the concentration of both dishwashing detergents leads to a decrease of germination energy and germination of cress salad seeds. Significant inhibition of the root length and the length of the aboveground part under the influence of both studied liquids was observed. The effectiveness of the phytotest with *L. sativum* to detect and quantify the potential toxicity of aqueous solutions of surfactant-containing dishwashing detergents has been confirmed. It was found that the studied dishwashing detergents at concentrations of 10-100 % are toxic to the test plant. The tested dishwashing liquid without phosphates, chlorine and soda revealed the lower level of toxicity in comparison with one containing these components. The obtained results indicate the potential danger of the studied surfactant-containing detergents in water bodies, represent an additional justification for preventive and protective engineering actions and also suggests the requirement of the development of new dishwashing liquids containing natural biosurfactants.

Key words: dishwashing liquid, *Lepidium sativum*, phosphates, phytotesting, toxicity, water pollution

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