PRELIMINARY ECOTOXICOLOGICAL EVALUATION OF ERYTHROSIN B AND ITS PHOTOCATALYTIC DEGRADATION PRODUCTS

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Abstract

The class of xanthene dyes has a complex chemical structure, which showed to be toxic for mixed culture of microorganisms (i.e. anaerobic granular sludge). Because of the unwanted effects of Erythrosin B (Ery B) on environmental components and some food confirmed previously, the dye was chosen in this study to evaluate its ecotoxicity. Also, the Ery B photocatalytic degradation products were assessed in terms of their ecotoxicity. Three-days seed germination and root growth tests were conducted using a dicotyledonous plant that is the garden cress (Lepidium sativum L.), in the presence of different dye concentration and its photodegradation products. Dye affected mostly the roots of the plant. According to toxic effects on root growth, toxicity of the dye indicated a 72h exposition average Effective Concentration EC50 value corresponding to 25 mgL⁻¹ Ery B.

The presence of the Ery B photocatalytic degradation products in the aqueous solution leads to a higher efficiency on Lepidium sativum L. germination, favoring the stem length growth.

Key words: dye degradation, Lepidium sativum L., toxicity test

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