



Bioaccumulation of Anionic and Nonionic Surfactants in *Ceratophyllum demersum* Plant in Tigris River, Baghdad, Iraq

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Abstract: Detergents (surfactants) are one of the environmental risks that cause adverse effects on aquatic ecosystems. The objective of this study to detect the ability of *Ceratophyllum demersum* plant to accumulate the detergents (surfactants) from the river water. Four sites were selected along the Tigris River within Baghdad City from upstream, midstream and downstream. The analyses of detergents are based on ultrasonic extraction of river sediment, then the analysts were measured by colorimetric determination photolab S12 and HPLC device. The only nonionic surfactant detected in both sites and seasons with few variations between the measurement methods, which assume the high washing activities that release directly to the river thus absorbed and accumulate at the *C. demersum* plant for long time. The surfactant (anionic) are undetectable by PhotolabS12 device for both sites and seasons, but it was detected by HPLC. The results revealed that the *C. demersum* plant has ability to absorb and accumulate this type of pollutants with high efficiency. This macrophyte can be used to detect the surfactant present in the aquatic environment and as removal agent (phytoremediation) from the environment with lowest cost.

Keywords: Detergents, Lotic ecosystem, Macrophyte, Ultrasonic extraction, Multivariate analysis
