

## Chapter 8

# EVALUATION OF BIOACCUMULATION FACTORS AND TRANSFER FACTOR FOR THE SOME AQUATIC MACROPHYTES SPECIES

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### Introduction

Trace element pollution is a major and serious environmental problem facing the contemporary world. Trace element pollution has been recognized as a global issue for decades. Rapid industrialization, urbanization, agricultural run-off (excessive use of fertilizers and pesticides), as well as airborne deposition etc. have resulted in trace element pollution of terrestrial and aquatic ecosystems (1). Aquatic ecosystems, especially the freshwater ecosystems, are more subjected to pollution than other ecosystems (2).

Macrophytes as plants that populate many different types aquatic ecosystems have significant role in productive and trophic relations of aquatic ecosystems, so they are one of the most important components of aquatic ecosystems (3). Aquatic plants are of specific interest, because they are capable of accumulating trace elements in large amount in comparison to terrestrial plants (4).

The usage of aquatic plants for assessment of pollution level of aquatic ecosystems with trace elements has a range of advantages in comparison with their determination directly in the water (5). Aquatic plants of all types (free floating, submerged or emergent) are known for accumulating trace elements (6). They absorb trace elements through roots, stems, leaves and/or flowers. Therefore, it is useful to identify the plant organ that absorbs the greatest amount of trace elements (7-10).

One of the methods to assess environmental situation in aquatic ecosystems, including the content of trace elements in rivers, is to determine concentration of these elements in aquatic plants (11-13). Aquatic plants can uptake considerable amounts of elements from water and/or sediment through passive and active absorption (14). Aquatic plants together with micro- and macroelements absorb

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2. The conducted analysis of trace elements in bottom sediments has shown that they are not contaminated.
3. Studied metals were accumulated in the following sequences in all of the investigated aquatic macrophytes; Fe>Zn>Cu>Cr>Ni. All elements were accumulated more in root than in stem, leaves and flowers (if available). Transport of trace elements within plants can also vary depending on their concentrations.
4. Bioaccumulation factor (BAF) was less than a unit for all trace element.
5. In this study found trace elements excluder species in all aquatic macrophytes (TF<1.0).
6. The accumulation of trace elements in aquatic plants depends on trace elements speciation and the species of plant.

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