

## Abstract

The aim of this study was to carry out phytoextraction experiments using corn plants (*Zea mays*) and determine the phytoextraction efficiency for specific non-steroidal anti-inflammatory drugs and carbamazepine and their combinations. After 10 days of growth, a nutrient solution containing ibuprofene, naproxene, diclofenac and carbamazepine in concentrations ranging from 5 to 10 mg/L was added to hydroponically cultivated plants. Nutrient solution samples were taken every 24 hours and the samples were then analysed using a HPLC/DAD system. At the end of the experiment, the experimental plants and roots were analysed for extractable residua using HPLC/DAD + FLD.

The greatest phytoextraction efficiency was found for ibuprofene. The second and third most effective extraction was observed for naproxene and diclofenac, depending on the evaluation criteria. The lowest phytoextraction efficiency was observed for carbamazepine.

With multi-component experiments, lower phytoextraction efficiency was found out for all substances with the exception of ibuprofene in combination with diclofenac and carbamazepine. The toxic impact of ibuprofene on plant transport mechanisms was also proven.

The extractable residua analysis confirmed the ibuprofene's toxicity on plant transport mechanisms and also the possibility of food chain contamination.

### Key words:

Phytoremediation, biotechnology, environmental pollution, drug residua, NSAID