

## Abstract

The aim of this study was to carry out experiments with maize (*Zea mays*) for the purpose of finding out the efficiency of phytoextraction of chosen pharmaceuticals from the nutrient solution. The plants were cultivated for three weeks in a sterile environment. Then was added a nutrient solution enriched with chosen benzodiazepines – diazepam, flunitrazepam, nitrazepam and bromazepam – in concentration 5-10 mg/L. The samples from each plant were taken every day (24 hours) and then were analyzed with HPLC/UV.

The efficiency of phytoextraction was evaluated in two ways. The first one as an percentage of a decrease of the concentration of the pharmaceuticals in the solution with time, the second one as an amount of phytoextracted pharmaceutical in milligrames per gram of the plant matter. From the standpoint of the decrease of the concentration was as the most efficient measured the phytoextraction of nitrazepam (74,7 %), less efficient diazepam and bromazepam (55,2 %, respectively 53,9 %) and the least efficient flunitrazepam (38,0 %). When converted to the mass of the plant matter the most efficient was found the phytoextraction of bromazepam (0,08 mg of drug to 1 gram of plant matter), lower efficiency by bromazepam and diazepam (both 0,02 mg) and the lowest again by flunitrazepam (0,01 mg).

**key words:** phytoextraction, benzodiazepines, diazepam, flunitrazepam, nitrazepam, bromazepam