

ABSTRACT

The aim of this study was to verify the possibility of ibuprofen degradation by selected plant cultures and determination of activities of antioxidant enzymes (peroxidase, catalase, ascorbate peroxidase and glutathione-S-transferase) as markers of oxidative stress caused by ibuprofen. *Nicotiana tabaccum* (cv. La Burley 21, cv. SR 1 and their GMOs) and *Nicotiana glauca* were used as experimental plants. The rate of removal of ibuprofen tested by tobacco was decreasing in the following order: *N. tabaccum* SR1 > *N. tabaccum* Zm-P60-1-T4 > *N. tabaccum* TRI 2T2 > *N. glauca* > *N. tabaccum* TRI 2T1 > *N. tabaccum* cv. La Burley > *N. tabaccum* Zm-P60-1-T5. As the most suitable tobacco for the removal of ibuprofen seemed untransformed *N. tabaccum* SR1. The long-term experiment showed that plant stress is being manifested even after longtime. *N. tabaccum* cv. La Burley 21 seemed to be the most tolerant to ibuprofen in compare with the total enzyme activities in cultures with the presence of ibuprofen and controls. *N. glauca* was the least tolerant cultivar.

Keywords: phytoremediation, ibuprofen, Nicotiana tabaccum, Nicotiana glauca, HPLC, peroxidase, catalase, ascorbate peroxidase, glutathion-S-transferase