

Abstract

The ability of the accumulation of thorium and study of the stress responses on his presence was tested on a selected cultivar of tobacco, La Burley 21. Plants were cultivated in Hoagland's hydroponic medium under artificial light. Except to the ability of accumulation and distribution of thorium in the all parts of plant was investigated the effect of selected organic and inorganic additions on accumulation. Among organic substances included citric acid, tartaric and oxalic acid in their presence was observed the increase of thorium in all parts of the plant. Were also tested products from the diamine and polyamines (putrescine, cadaverine, spermine and spermidin). These substances, also known for their antioxidant activity in plants, had an impact on reducing the accumulation of thorium, especially in the root system of plants. The most important factor influencing the accumulation of thorium was the absence of phosphate ions in a hydroponic medium, which caused the rise of the concentration of thorium about several levels in all parts of the plants. The initial decrease of pH after additions of organic acids or addition of high concentrations of thorium and the gradual increase of pH during cultivation had proved significant. It was also compared the uptake of accumulation and distribution of thorium cultivar La Burley 21 with 5 other cultivars and their 14 derived GMOs, and it was found that the studied cultivar represented average accumulation of Th in individual parts, but with very good distribution ratio of root: stem: sheets.