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KONFERENCIJA STUDENATA BIOLOGIJE, EKOLOGIJE I ZAŠTITE IVOTNE SREDINE



KNJIGA IZVODA

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ISPITIVANJE UTICAJA EKSTRAKTA VLAŠCA (*ALLIUM SCHOENOPRASUM* L.) I KVERCETINA NA MORFOLOŠKE I FIZIOLOŠKE KARAKTERISTIKE KLIJANACA *ARABIDOPSIS THALIANA*

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Ekstrakt listova vlašca je bogat flavonolima (kemferol, kvercetin i izoramnetin) i flavonolnim glikozidima (kemferol-3-O-glikozid i kvercetin-3-O-glikozid). Ova jedinjenja predstavljaju važnu grupu flavonoida sa širokim spektrom biološke aktivnosti. Cilj ovog istraživanja je da se ispita kako klijanci model biljke *A. thaliana* reaguju na prisustvo ekstrakta vlašca (koncentracije 100 mg/L) i kvercetina (koncentracije 15.11 mg/L) u hranljivoj podlozi. Dužina hipokotila je izmerena petog, sedmog i desetog dana nakon klijanja semena. Na elongaciju hipokotila značajno utiče prisustvo kvercetina u podlozi. Zahvaljući DAB (3,3'-diaminobenzidin) bojenju detektovana je akumulacija H₂O₂ u biljnom tkivu klijanaca *A. thaliana* starosti 10 dana. Ovaj rezultat je u saglasnosti sa povećanom aktivnošću antioksidativnog enzima peroksidaza kod klijanaca koji su rasli na podlozi sa ekstraktom vlašca. Takođe je određena i aktivnost enzima glutathion transferaza, koji se dominantno nalazi u citosolu i učestvuje u procesima detoksikacije biljne ćelije. Opisane promene u aktivnosti antioksidativnih enzima klijanaca model biljke na podlozi sa ekstraktom vlašca, usmeravaju nas ka novim koracima u istraživanju sa mogućnošću razvoja potencijalnih bioherbida.

Ključne reči: ekstrakt, kvercetin, vlašac, *Arabidopsis thaliana*, hipokotil, peroksidaze, DAB, glutathion transferaza

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ASSESSMENT OF THE EFFECT OF CHIVE EXTRACT (*ALLIUM SCHOENOPRASUM* L.) AND QUERCETIN ON MORPHOLOGICAL AND PHYSIOLOGICAL CHARACTERISTICS OF *ARABIDOPSIS THALIANA* SEEDLINGS

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Chive leaf extract is a rich source of flavonols (kaempferol, quercetin and izoramnetin) and flavonoid glycosides (kaempferol-3-glucoside and quercetin-3-glucoside). These compounds are a very important group of flavonoids that have a broad range of biological activities. The aim of this study is to investigate the response of *Arabidopsis thaliana* to the presence of chive extract (concentration of 100 mg/L) and quercetin (concentration of 15.11 mg/L) in the growth medium. The length of hypocotyl was measured on the 5th, 7th, and 10th day after the germination of seeds. The presence of quercetin in the growth medium significantly effects the elongation of the hypocotyl. Accumulation of H₂O₂ in the plant tissue of seedlings was detected by DAB staining (3,3'-diaminobenzidine). These results correspond with increased activity of antioxidative enzyme peroxidase in seedlings that grow on the medium with chive extract. The activity of glutathione transferase was also determined. This enzyme is predominantly located in the cytosol and participates in the process of detoxification of plant cells. The described changes in antioxidative enzyme activities in plant model seedlings on growth medium with chive extract guide us towards new steps in research with the possible development of a potential bioherbicide.

Keywords: extract, quercetin, chive, *Arabidopsis thaliana*, hypocotyl, peroxidase, DAB, glutathione transferase

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