APIGENIN – ANTIFUNGALNA AKTIVNOST FLAVONOIDA PRISUTNOG U PIVU I VINU

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DOI: 10.5937/PIVOS24019I

Sažetak:
Flavonidi su bioaktivna jedinjenja prisutna u različitim biljkama, a neki od njih, poput apigenina, nalaze se i u pićima, pivu i vinu. Apigenin je poznat po različitim biološkim aktivnostima, najčešće su to anitiinflamatorna i antioksidantna. Cilj našeg istraživanja je bio da steknemo detaljniji uvid u njegov antifungalni potencijal. Mikrodilucionom metodom utvrđene su minimalne inhibitorne (MIK) i minimalne fungicidne koncentracije (MFK) apigenina prema različitim vrstama roda Candida i kretale su se u rasponu 0.10 – 0.15 mg/mL za MIK i 0.15-0.30 mg/mL za MFK. Pored inhibicije planktonskog rasta, apigenin je sprečavao rast mikroorganizama u formi biofilma (više od 50% inhibicije primenom sub-inhibitornih koncentracija apigenina). Sposobnosti formiranja biofilmova kao i mogućnost promene morfologije i to prelazak iz kvasolikog u hifalni oblik su osobine gljiva koje im omogućavaju da dovedu do bolesti. Sposobnost Candida albicans da formira hife je primenom apigenina opala sa 33% na 19%. Utvrđen je mehanizam antifungalnog delovanja apigenina koji je delimočno zasnovan na remećenju integriteta ćelijske membrane koje dolazi do izražaja nakon 30 min tretmana. Apigenin je pokazao obećavajući antifungalni potencijal i potrebno je dalje ispitivanje u cilju produbljivanja saznanja o njegovoj bioaktivnosti.

Ključne reči: apigenin, flavonoid, bioaktivnost.

APIGENIN – ANTIFUNGAL ACTIVITY OF FLAVONOID COMMONLY FOUND IN BEER AND WINE

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Summary:
Flavonoids are bioactive compounds present in various plants, and some of them, such as apigenin, are also found in beverages including beer and wine. Apigenin is known for various biological activities, such as anti-inflammatory and antioxidant, and the goal of our research was to gain a more detailed insight into its antifungal potential. Using the microdilution method, the minimum inhibitory (MIC) and minimum fungicidal concentrations (MFC) of apigenin against different species of the Candida were determined and ranged from 0.10 to 0.15 mg/mL for MIC and 0.15-0.30 mg/mL for MFC. In addition to inhibiting planktonic growth, apigenin also prevented the growth of microorganisms in the form of biofilms (more than 50% inhibition using sub-inhibitory concentrations of apigenin). Among the properties of fungi that allow them to cause disease, in addition to the ability to form biofilms, is the possibility of changing morphology, from a yeast-like to a hyphal form. With the application of apigenin, the ability of Candida to form hyphae dropped from 33% to 19%. The mechanism of the antifungal action of apigenin has been determined, and is partially based on the disruption of the integrity of the cell membrane, which becomes apparent after 30 minutes of treatment. Apigenin has shown promising antifungal potential and should be further investigated in order to deepen the knowledge of its bioactivity.

Keywords: apigenin, flavonoid, bioactivity.

Acknowledgment: This research was funded by the Ministry of Science, Technological Development and Innovations of the Republic of Serbia, grant number 451-03-66/2024-03/200007.