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SUSTAINABLE POSTHARVEST AND  
FOOD TECHNOLOGIES**

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**and**

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IN AGRICULTURE**

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**April 7<sup>th</sup> – 10<sup>th</sup>, 2025, ZLATIBOR, SERBIA**

# **BOOK OF ABSTRACTS**

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ODRŽIVE POSLEUBIRAJUĆE I  
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## BENEFICIAL IMPACTS OF CHOKEBERRY AND TART CHERRY BASED DIETARY SUPPLEMENTS IN DIABETICS

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Diabetes mellitus (DM) is a metabolic disorder that may cause increased risk of various diseases mostly cardiovascular ones. Currently, available therapies are effective for some individuals, but not all. As a result, there is a high need for novel antidiabetic medications or treatments which can help to regulate glycemia or reduce the negative consequences of diabetes, especially on blood vessels. Epidemiological studies have shown that diet can significantly affect blood sugar levels, and berries rich in polyphenols, especially anthocyanins, have shown particularly good effects. Concerning the chemical composition of chokeberry (*Aronia melanocarpa*), it has been highlighted that anthocyanins are the most important pharmacologically active compounds responsible for its antioxidative, anti-inflammatory, and vasoprotective effects. More recently, the promising potential of cherry juice, originated from tart cherry (*Prunus cerasus*), a low-calorie fruit rich in secondary metabolites such as anthocyanins, hydroxycinnamates, and flavan-3-ols, in terms of its antioxidant (stimulation of superoxide dismutase and glutathione peroxidase) and anti-inflammatory properties (inhibition of cyclooxygenase-2) was revealed. Our aim was to evaluate the effect of combined oral consumption of two dietary supplements based on chokeberry and tart cherry juices over a period of 90 days on HbA1C and, systolic and diastolic pressure, intimo-medial complex (IMC) where atherosclerosis takes place and safety in 27 volunteers with diabetes type 2. Moreover, *in vitro* antidiabetic activity of juices and supplements were studied. Statistically significant decrease in the thickness of both, carotid and femoral artery was noticed. Slight decrease in systolic and diastolic pressure was observed but it was not statistically significant while an improvement in HbA1C was observed in 62% of respondents. Moreover, the levels of creatinine, urea, ALT and AST values remained within normal limits, which indicates that the products did not have negative effects on the liver and kidneys during the study pointed its safety. *In vitro* inhibition of both, alpha-glucosidase and alpha-amylase was noticed for chokeberry and tart cherry juices as well as for both dietary supplements ( $IC_{50}$  0.11 ± 0.02, 21.77 ± 1.66, 0.06 ± 0.01, 0.08 ± 0.01, 5.13 ± 0.11, 12.51 ± 0.83, 6.89 ± 0.36, 9.28 ± 0.04 mg/mL, respectively).

**Key words:** *chokeberry, tart cherry, dietary supplements, diabetes*

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## POVOLJNI EFEKTI KONZUMACIJE DODATAKA ISHRANI NA BAZI SOKOVA ARONIJE I VIŠNJE KOD DIJABETIČARA

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Dijabetes melitus (DM) je metabolički poremećaj koji može uzrokovati povećan rizik od raznih bolesti, uglavnom kardiovaskularnih. Trenutno, dostupne terapije su efikasne za neke pojedince, ali ne za sve. Kao rezultat toga, postoji velika potreba za novim antidijabetičkim lekovima ili tretmanima koji mogu pomoći da se reguliše glikemija ili smanje negativne posledice dijabetesa, posebno na krvne sudove. Epidemiološke studije su pokazale da ishrana može značajno da utiče na nivo šećera u krvi i zdravlje krvnih sudova, a posebno dobro dejstvo pokazuje bobičasto voće bogato polifenolima, posebno antocijanima. Što se tiče hemijskog sastava aronije (*Aronia melanocarpa*), poznato je da su antocijanini najvažnija farmakološki aktivna jedinjenja odgovorna za njeno antioksidativno, antiinflamatorno i vazoprotektivno dejstvo. U skorije vreme, uočen je obećavajući potencijal soka od višnje (*Prunus cerasus*), niskokalorične voćke bogate sekundarnim metabolitima kao što su antocijani, hidroksicinamati i flavan-3-oli, u smislu njegovog antioksidantnog (stimulacija superoksida dismutaza i glutacion peroksidaza) i antiinflamatornog svojstva (inhibicija ciklooksigenaze-2). Cilj našeg istraživanja je bio da procenimo efekat kombinovane oralne konzumacije dva dijetetska suplementa na bazi sokova od aronije i višnje u periodu od 90 dana na HbA1C, sistolni i dijastolni pritisak, debljinu intimo-medijalnog kompleksa (IMK) gde se odvija ateroskleroza i bezbednost kod 27 dobrovoljaca sa dijabetesom tipa 2. Ispitana je i *in vitro* antidijabetična aktivnost sokova i suplemenata. Uočeno je statistički značajno smanjenje debljine i karotidne i femoralne arterije. Uočeno je blago smanjenje sistolnog i dijastolnog pritiska, ali nije bilo statistički značajno, dok je poboljšanje u novou HbA1C primećeno kod 62% ispitanika. Nivoi kreatinina, uree, ALT i AST su ostali u granicama normale, što ukazuje da proizvodi nisu imali negativan uticaj na jetru i bubrege tokom ispitivanja, što ukazuje na njihovu bezbednost. *In vitro* inhibicija alfa-glukozidaze i alfa-amilaze je pokazana za sokove od aronije i višnje, kao i za oba dijetetska suplementa (IC<sub>50</sub> 0,11 ± 0,02, 21,77 ± 1,66, 0,06 ± 0,01 ± 0,01 ± 0,11, 12,51 ± 0,83, 6,89 ± 0,36, 9,28 ± 0,04 mg/mL, respektivno).

**Ključne reči:** aronija, višnja, dodaci ishrani, dijabetes

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