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Shaping the Future of Agriculture

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Editors

Snežana Mladenović Drinić, Jelena Vukadinović, Beka Sarić

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Variability of vitamin E content in ZP popcorn hybrids

Jelena Srdić[1*], Jelena Vukadinović[1], Snežana Mladenović Drinić[1], Ana Nikolić[1], Jasmina Milenković[2], Natalija Kravić[1], Violeta Anđelković[1]

[1]Maize Research Institut Zemun Polje, Belgrade Serbia
[2]Institut for Forage Crops Kruševac, Kruševac Serbia

[*]Corresponding author: jsrdic@mrizp.rs

Vitamin E is a group of eight lipid-soluble antioxidants found in plants, divided into tocopherols and tocotrienols. As an essential nutrient, it supports seed development, stress response, and membrane protection. In humans, it helps protect cell membranes and may reduce the risk of diseases such as Alzheimer's, cancer, neurological disorders and inflammation. Both tocopherols and tocotrienols exist in four isoforms: α (alpha), β (beta), γ (gamma), and δ (delta), classified based on the position of methyl groups on the chromanol ring. This study analyzed α, γ+β, and δ tocopherols (T) and tocotrienols (T3) in five popcorn hybrids grown in Zemun Polje (ZP) and Kruševac (KŠ), Serbia. The content of vitamin E was higher in Zemun Polje, indicating that environmental factors had a significant impact on the content. The average content of α-T was 5.31 µg/g dry weight (DW) at ZP and 4.27 µg/g DW at KŠ, with ranges of 3.99–7.52 µg/g DW and 3.18–5.03 µg/g DW, respectively. The highest α-T content at both locations was recorded in hybrid ZP 6119k. The average content of γ+β-T was 29.63 µg/g DW at ZP and 23.51 µg/g DW at KŠ. δ-T content ranged from 1.69–3.63 µg/g DW at ZP and from 0.89–2.25 µg/g DW at KŠ. The highest α-T3 content at both locations was found in hybrid ZP 614k (5.21 µg/g DW at ZP and 3.62 µg/g DW at KŠ). γ+β-T3 varied from 4.13–7.07 µg/g DW (ZP) and 3.29–6.99 µg/g DW (KŠ). The highest values of δ-T3 were 0.74 µg/g DW in ZP 6153k (ZP) and 0.76 µg/g DW in ZP 6119k and ZP 6170k (KŠ). Popcorn hybrids with higher Vitamin E content, especially ZP 6119k, show potential as functional foods with added health benefits for human consumption.

Keywords: *specialty maize; tocopherols; tocotrienols*

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