



**XI INTERNATIONAL SYMPOSIUM OF  
AGRICULTURAL SCIENCES**

**BOOK OF ABSTRACTS**

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## Genetic variability of maize grain antioxidant compounds

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### Abstract

Due to its natural diversity maize is one of the most heterogeneous cereals in terms of biochemical composition. Maize grain contains antioxidant compounds, associated with nutraceutical properties and health promotion benefits. Therefore, such grain is considered to be a functional food and features high antioxidant activities and preventive functions against cancer, diabetes, obesity and neurodegenerative disorders. The purpose of this research was to screen a set of six maize lines from MRI gene bank and a set of 10 ZP commercial lines for phenolic acids, tocopherols and carotenoids content by HPLC. Ranges of phenolic acids were as follows: gallic 2.86-26.99 µg/g, protocatechuic 2.21-75.92 µg/g, vanillic 1.10-10.34 µg/g, caffeic 0.65-8.77 µg/g, syringic 0.57-12.74 µg/g, sinapic 0.11-4.50 µg/g, p-coumaric 0.23-1.58 µg/g, ferulic 0.71-4.61 µg/g, and cinnamic acid 0.87-45.61 µg/g. Significant variations for all analyzed components between genotypes were observed. The highest coefficient of variation is estimated for β carotene and sinapic acid. Maize lines from gene bank collection had highest average content of gallic acid, δ-tocopherol, γ+β-tocopherol, α-tocopherol, and β carotene. ZP commercial lines had higher average value for protocatechuic, vanillic, caffeic, syringic, sinapic, p-coumaric, ferulic, cinnamic acid and lutein + zeaxanthin. Line ZPL6 had the highest content of phenolic acids and β carotene among the lines from the gene bank; line ZPL14 and ZPL16 had the highest value of vanillic, p-coumaric, ferulic acid, γ + β-tocopherol and lutein + zeaxanthin. PCA for all analyzed antioxidant compounds clearly separated inbred lines from MRI gene bank from ZP commercial lines. This study provides baseline information on the nutritional value of analyzed maize lines which can be used for future breeding works and enhance germplasm utilization focused on the improved nutritional and functional properties of maize.

*Key words:* phenolic acids, tocopherols, carotenoids, maize, HPLC