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Research abstract

Scavenging Capacity of Reactive Nitrogen Species of Four Varieties of Maize (*Zea mays* L.)

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Abstract: Nitric oxide (NO) and peroxynitrite (ONOO⁻) scavenging ability, total phenolic compounds and anthocyanin of four maize varieties (yellow, red, black and purple) were determined. Total phenolic contents ranged from 10.6 to 72.1 mg/g and total anthocyanins ranged from 0.70 to 44.6 /g of whole grain flour. For varieties examined those that were most abundant in total phenolic compounds were most abundant in anthocyanins. Crude extracts from pigmented maize were higher in scavenger activity (63% for the nitric oxide inhibition and 84% for the peroxynitrite mediated for inhibition of nitrotyrosine formation), compared with extracts of yellow variety. The extract from purple maize showed the highest scavenging potential. The scavenging activity of each extract against nitric oxide are attributable to the phenolic content compounds that possess redox activity, which allows them to act as free radical scavengers. It is likely that anthocyanins react with peroxynitrite by directing the nitration to their own structures and the aglycone structure is the primary determinant for the peroxynitrite scavenging activity. Differences in reactive nitrogen scavenging ability among maize varieties are reported in the present study. Results showed that scavenging capacities could be correlated with total phenolic and/or anthocyanins content.

Keywords: Maize, nitrogen species, phenolic compounds, scavenging capacity.

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