

Analysis on Anti-oxidative Activity of Vegetables from Long-term Organic Farming

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Abstract

A long-term experiment field of organic farming (OF) has been set at Chinan branch station of Kaohsiung District Agricultural Research and Extension Station (KDARES) since July 1988, and another organic field close to the long-term experiment field has also been set more than seven years. Owing to little information about anti-oxidative activity of organic vegetables published domestically, in this article, organic tomatoes and cabbages from autumn season 2008 and organic sweet corns from spring season 2009 were used to analyze the anti-oxidative activity and the content of anti-oxidative substances. Besides, vegetables from intermediate farming (IF) and conventional farming (CF) were used to be the control. In the result of anti-oxidative activity of DPPH (1, 1-diphenyl-2-picrylhydrazyl) free radical scavenging effect, the 7-year organic cabbage of crop rotation system 1 (R1) and 20-year and 7-year organic tomatoes of both rotation system showed better than those of CF. In the result of oxygen radical absorbance capacity (ORAC), the organic cabbage and tomatoes were better than those of CF. The organic cabbage and tomatoes had higher amount in total poly-phenolic content, but only the 7-year organic treatment showed obvious difference. The Organic tomatoes were not obviously better than those of CF in the analyses of β -carotene and lycopene. In the analysis on sweet corn, there was no obvious advantage in organic sweet corn corresponding to those of CF in the anti-oxidative activity of DPPH assay and ORAC and total poly-phenolic content. In the conclusion, both the sorts of crop and the amount of anti-oxidative substances would affect the anti-oxidative activity.

Key words: organic vegetables; anti-oxidative activity; DPPH(1, 1-diphenyl-2-picrylhydrazyl) free radical scavenging effect; oxygen radical absorbance capacity; total poly-phenolic; β -carotene; lycopene

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