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The Effect of Antioxidant Capacity of the Capsaicinoids Extracts from Hot Chilli Pepper on the Autoxidation of Oxymyoglobin

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ABSTRACT

An antioxidant capacity of the capsaicinoids extracts from hot chilli pepper based on the measurement of the absorbance decreases as a result of the radical scavenging of 1,1-diphenyl-2-picrylhydrazyl ($DPPH^{\bullet}$) radical was conducted by spectrophotometric method. The extracts of total capsaicinoids were comparatively obtained by using both magnetic stirring extraction (MSE) and accelerated solvent extraction (ASE) methods. The average percentages of DPPH radical scavenging of the methanolic extracts using MSE and ASE were ranged from 68.1-82.6% and 70.0-85.8%, respectively. In application, the retardation of an autoxidation of oxymyoglobin (MbO_2) in the presence of the capsaicinoids as expressed by the observed rate constant (k_{obs}) of the kinetics reaction was measured under the optimum conditions. The average percentages of the retardation effect on the autoxidation reaction when monitoring at the absorbance of 543 nm (A_{543}) and 581 nm (A_{581}) were found in the ranges of 34.0-74.5% and 39.5-79.2% for MSE and in the ranges of 38.9-75.8% and 44.7-80.5% for ASE, respectively. Among ten varieties of the chilli pepper samples used, trends in the retardation effect according to their antioxidant activity on the autoxidation of MbO_2 were found higher than 70%. From these results, it was, therefore, shown that the antioxidant capacity of the capsaicinoids in the extracts could enhance stabilizing the MbO_2 by acting as the radical scavenging capacity.

Keywords: Capsaicinoids, chilli pepper, antioxidant activity. autooxidation, myoglobin, accelerated solvent extraction,magnetic stirring extraction.
