

Studies on the Antioxidant and Whitening Effects of Cheongyang Pepper based on a Bibliometric Approach

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Red pepper (*Capsicum annuum* L.) is one of the most consumed vegetable worldwide. In this study, we tried to suggest the possibility of Cheongyang pepper as a functional cosmetic material by identifying the physiological activity, especially antioxidant and whitening effects of Cheongyang pepper through bibliometric analysis and experimental studies. A bibliometric analysis was performed through co-word analysis of 8,892 papers retrieved from SCOPUS. 4 research fields were obtained by cluster mapping from VOSviewer software, among which we noted the antioxidant activity of extracts from *Capsicum annuum* L.. Phenol as a useful ingredient of Cheongyang pepper was analyzed using HPLC (high-performance liquid chromatography). Antioxidant and whitening effects were evaluated by measuring DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging activity, hydrogen peroxide scavenging activity, and tyrosinase inhibitory activity. Cheongyang pepper extract showed contents of 0.106 ± 0.01 and 0.105 ± 0.02 mg/g, respectively, in the order of gallic acid and protocatechuic acid. The extract exhibited 56.95% DPPH scavenging activity and 43.97% hydrogen peroxide scavenging activity at a concentration of 1,000 μ g/ml. In addition, 1,000 μ g/ml of the extract inhibited tyrosinase activity by 52.44% and 42.61%, respectively in a whitening efficacy test using L-tyrosine and L-DOPA (L-3,4-dihydroxyphenylalanine) as substrates. These results suggest that Cheongyang pepper extract and its active ingredients have antioxidant and whitening effects, and the possibility of future development as a whitening functional cosmetic material.

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