

Title Effects of various extraction conditions on phenolic contents and their antioxidant activities of litchi fruit pericarp

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Abstract

Litchi fruit pericarp tissue has been considered an important source of dietary phenolic. Phenolics present in litchi pericarp tissues exhibit great potential for developing antioxidants or anticancer drugs. To develop better extraction programs, this study investigated effects of various extraction solvents (water, ethanol, methanol and acetone), concentrations (20, 40, 60, 80 and 95%), pH values (2.0, 3.0, 4.0, 5.0, 6.0 and 7.0), temperatures (30, 40, 50, 60, 70 and 80°C) and durations (1, 2, 3, 4 and 5 h) on total phenolic contents and their related antioxidant activities. The study consisted of two experiments. The first experiment was conducted to optimize extraction conditions based on the total phenolic content and antioxidant activity. Application of 60% ethanol, with the extraction duration of 3 h at 60°C and pH 4.0, exhibited the highest total phenolic content and strongest antioxidant activity using the α,α -diphenyl- β -picrylhydrazyl (DPPH) method. In the second experiment, litchi fruit of three major litchi cultivars, 'Feizixiao', 'Nuomizi' and 'Huaizhi', was used to assess their total phenolic contents and antioxidant activities. It was found that 'Nuomizi' exhibited the highest total phenolic content and strongest DPPH radical scavenging activity under the optimum extraction conditions, which may suggest that the cultivar had a better utilization value.