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Quantification of Rutin, Quercitrin and Quercetin in *Cosmos Caudatus* Kunth by RP-HPLC

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Cosmos caudatus is a traditional medicinal plant from the family Compositae. It is known in Malaysia as *Ulam Raja* which means the king's salad. The fresh leaves are consumed as appetizer for health benefits for various ailments such as to improve blood circulation and to promote the formation of healthy bones. This study aims to develop a reverse phase HPLC method for quantification of rutin, quercitrin and quercetin as the marker compounds in fifteen different *C. caudatus* extracts. The method was validated for selectivity, linearity, precision, accuracy and limits of detection and quantification. Selectivity was confirmed based on retention time and UV-Vis spectra; linearity was in the range 0.5-500 µg/ml at $R^2=1.0$; the intraday and interday precision was determined as the relative standard deviation of peak area and retention time, and was found to be $0.3\pm 0.07\%$ and $0.02\pm 0.004\%$, respectively; percentage recovery of rutin, quercitrin and quercetin was in the range $(91.63\pm 3.1)\%$ – $(95.93\pm 3.0)\%$, $(80.41\pm 1.5)\%$ – $(93.99\pm 5.0)\%$, and $(92.84\pm 3.1)\%$ – $(98.05\pm 2.6)\%$; the limits of detection were in the range 0.048-0.052 µg/ml, 0.144-0.157 µg/ml, 0.078-0.079 µg/ml, and the limits of quantification were 0.235-0.236 µg/ml, 0.152-0.164 µg/ml, and 0.461-0.497 µg/ml, respectively. Results showed *C. caudatus* contains high concentration of flavonoids and flavonoid glycosides including rutin, quercitrin, iso-quercitrin and quercetin and quercitrin being the major constituent in this plant. Hence it may be used as a reference compound for standardization of this medicinal herb. In conclusion, the method developed can be used for quantitative analysis in quality control, stability studies, pharmacokinetics, and standardization purpose.

Keywords: Rutin, quercitrin, quercetin, *Cosmos caudatus*.
