

## A Novel Method for Isolation of Kaempferol and Quercetin from Podophyllum Hexandrum Rhizome

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**Abstract :** Podophyllum hexandrum belonging to family berberidaceae has gained attention in phytochemical and pharmacological research as it shows excellent anticancer activity and has been used in treatment of skin diseases, sunburns and radioprotection. Chemically it contains lignans and flavonoids such as kaempferol, quercetin and their glycosides. Objective: To isolate and identify Kaempferol and Quercetin from Podophyllum rhizome. Method: The powdered rhizome of Podophyllum hexandrum was subjected to soxhlet extraction with methanol. This methanolic extract is used to obtain podophyllin. Podophyllin was extracted with ethyl acetate and this extract was then concentrated and subjected to column chromatography to obtain purified kaempferol and quercetin. Result: Isolated kaempferol, quercetin were light yellow and dark yellow in colour respectively. TLC of the isolated compounds was performed using chloroform: methanol (9:1) which showed single band on silica plate at Rf 0.6 and 0.4 for kaempferol and quercetin. UV spectrometric studies showed UV maxima (methanol) at 259, 360 nm and 260, 370 nm which are identical with standard kaempferol and quercetin respectively. Both IR spectra exhibited prominent absorption bands for free phenolic OH at 3277 and 3296.2 cm<sup>-1</sup> and for conjugated C=O at 1597 and 1659.7 cm<sup>-1</sup> respectively. The mass spectrum of kaempferol and quercetin showed (M+1) peak at m/z 287 and 303.09 respectively. <sup>1</sup>H NMR analysis of both isolated compounds exhibited typical four-peak pattern of two doublets at δ 6.86 and δ 8.01 which was assigned to H-3',5' and H-2',6' respectively. Absence of signals less than δ 6.81 in the <sup>1</sup>H NMR spectrum supported the aromatic nature of compound. Kaempferol and Quercetin showed 98.1% and 97% purity by HPLC at UV 370 nm. Conclusion: Easy and simple method for isolation of Kaempferol and Quercetin was developed and their structures were confirmed by UV, IR, NMR and mass studies. Method has shown good reproducibility, yield and purity.

**Keywords :** flavonoids, kaempferol, podophyllum rhizome, quercetin

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