

Chemical and Biological Studies of *Nicotiana plumbaginifolia* (Solanaceae)

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Abstract

Nicotiana plumbaginifolia Viv. is an annual herb belonging to the family Solanaceae, which grows abundantly in the weedy lands of Bangladesh. This plant possesses analgesic, antibacterial, anti-anxiety and hepatoprotective properties, and produces various phenolic compounds including flavonoids¹. The present study afforded determination of total phenolic and flavonoid contents, and for the first time. Extensive separation and purification of the methanolic leaf extract of *N. plumbaginifolia* led to the isolation and characterization of highly oxygenated flavonoids, e.g., 3,3',5,6,7,8-hexamethoxy-4',5'-methylenedioxyflavone (1), 3,3',4',5',5,6,7,8-octamethoxyflavone (2, exoticin), 6,7,4',5'-dimethylenedioxy-3,5,3'-trimethoxyflavone (3) and (3,3',4',5,5',8-hexamethoxy-6,7-methylenedioxyflavone (4) from the leaves of *N. plumbaginifolia*^{2,3}. All these flavonoids are rather rare natural products, and only found in a few genera, e.g., *Polygonum* and *Murraya*⁴. The structures of the isolated flavonoids were elucidated by comprehensive spectroscopic analyses, e.g., UV, ¹H, ¹³C NMR, DEPT, HSQC, HMBC and MS. The present study further allowed us for the first time to determine the total phenolic and flavonoid contents as well as anti-nociceptive activity of the crude extract. The total phenolic and flavonoid content were determined using Folin–Ciocalteu's reagent and aluminum chloride, respectively. The total flavonoid content was determined as 439.69 ± 0.87 mgQE /gextract which was relatively higher than measured total phenolic content (275.45 ± 2.75 mgGAE /gextract). On the other hand, the antinociceptive activity was assessed using acetic-acid induced writhing, hot plate, tail immersion, formalin- and carrageenan-induced paw edema test, where the extract demonstrated significant antinociceptive activity.

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Biography

Dr. Md. Abdur Rashid is a Professor of Natural Product Chemistry, Department of Pharmacy, University of Dhaka. He is a Fellow of Bangladesh Academy of Sciences and the Royal Society of Chemistry (FRSC). Dr. Rashid obtained Ph.D. from the University of Strathclyde, Glasgow, U.K. in 1992. Prof. Rashid served as the Dean of the Faculty of Pharmacy,

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