

Antifungal flavonoids of *Melochia corchorifolia*

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Abstract : 5,7-Dihydroxyflavone, apigenin, kaempferol and quercetin has been isolated from aerial parts of *Melochia corchorifolia* and their structures established by spectral evidences. These flavonoids exhibited significant antifungal activity. This is the first report of these flavonoids in *M. corchorifolia* and their antifungal activity.

Keywords : *Melochia corchorifolia*, flavonoids, antifungal activity.

Introduction

Melochia corchorifolia Linn. (Sterculaceae), a genus of herbs is found throughout India in waste places, road sides, bunds of rice fields and fallow lands and ascending to 1200 m in Himalayas. It is used in Indian system of medicine for the treatment of swelling of abdomen and dysentery¹. A number of cyclopeptide alkaloids²⁻⁴ and flavonoids⁵ have earlier been reported from this plant. We report here the isolation of four flavonoids, 5,7-dihydroxyflavone, apigenin, kaempferol and quercetin from *M. corchorifolia* and antifungal activity of these flavonoids against spore germination of some phytopathogenic fungi. This is the first report of the occurrence of these flavonoids in this plant and antifungal activity of these compounds.

Experimental

Dried, powdered aerial part of the plant (2 kg) was extracted with MeOH in a Soxhlet extractor. The MeOH extract was evaporated to dryness which gave brown gummy mass (18 g). It was chromatographed over SiO₂ gel column, eluted with solvents of increasing polarity. The eluates from CHCl₃, CHCl₃-MeOH (99 : 1), (98 : 2) and (97 : 3) after crystallisation from MeOH furnished

respectively, 5,7-dihydroxyflavone (1)⁶ as yellow granules (25 mg), m.p. 213–215 °C; C₁₅H₁₀O₄ (HRMS, *m/z* 254.0583 (M⁺), calcd. for : 254.0578); apigenin (2)⁷ as yellow granules (28 mg), m.p. 347–348 °C (dec.), C₁₅H₁₀O₅ (HRMS, *m/z* 270.0533 (M⁺), calcd. for : 270.0528); kaempferol (3)⁸ as yellow granules (34 mg), m.p. 270–273 °C, C₁₆H₁₂O₆ (HRMS, *m/z* 286.0480 (M⁺), calcd. for : 286.0477) and quercetin (4)⁸ as yellow granules (40 mg), m.p. 310–312 °C, C₁₅H₁₀O₇ (HRMS, *m/z* 302.0426 (M⁺), calcd. for : 302.0426). All these compounds exhibited the extended spectral properties and were finally identified by direct comparison with authentic samples.

Antifungal activity : The antifungal activity of these flavonoids were assessed against spore germination of the fungi, *Alternaria tenuissima*, *A. carthami*, *A. alternata*, *Fusarium lini*, *F. udum*, *Helminthosporium oxyzae*, *H. fureicum* and *Ustilago* sp. at the concentration of 200, 500 and 1000 mg/ml, following the method prescribed in literature⁹. The complete inhibition (100%) of spore germination at all concentrations was observed with 5,7-dihydroxyflavone against *H. oxyzae* and *F. lini*; apigenin against *A. carthami* and *F. lini*; kaempferol against *F. udum* and *Ustilago* sp. and quercetin against *A. alternata*

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and *F. lini*. This indicated that these compounds possessed significant antifungal activity. The antifungal activity of several naturally occurring flavonoids⁹⁻¹¹ have earlier been reported. This is the first report of the antifungal activity of these flavonoids.

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