

## Research Article

# Chemical Constituents From the Leaves of *Callicarpapedunculata*

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## INTRODUCTION

*Callicarpapedunculata* R. Brown belongs to the family of Verbenaceae, it is a small shrub widely distributed in Asian countries, and is very common in thickets at low altitudes.<sup>1</sup> The aerial parts were collected from botanical garden, Bhopal University, India in September, 2014 and was identified (voucher specimen No. CP-74) by the taxonomist of the Department of Botany, Bhopal University. Collected leaves were dried and pulverized into a coarse powder and stored into an airtight container. No previous phytochemical studies on *C. pedunculata* were reported. Crude extracts, major metabolites and their derivatives are also used in several diseases like CNS activity, diabetes, analgesic, IBS, antirheumatic, excitant, febrifuge and tonic.<sup>2-28</sup> However, previous studies have revealed that *C. macrophylla* produced diterpenoids such as calliterpenone and its monoacetate, and calliphylline, which is an isopimaradiene derivative.

## RESULTS

Five kilograms of dried and powdered leaves of *C. pedunculata* were extracted four times with EtOH under reflux Soxhlet. Removal of solvents under vacuum, gave a brown gummy solid which was extracted with CHCl<sub>3</sub>. Forty grams of the CHCl<sub>3</sub> extracts was chromatographed over silica gel (200–300 mesh) and eluted with petrol, and petrol–EtOAc (10:1, 5:1, 2:1, 1:1), EtOAc, MeOH. The elutes were collected as 500 ml fractions. The fractions eluted with petrol: EtOAc (5:1) were combined (12.5g) according to TLC and further purified by chromatography over Sephadex LH-20, reverse phase C-18 silica gel and recrystallization to yield compound 1 (40mg), compound 2 (25mg), compound 3 (22mg), compound 4 (35mg), respectively. All these compounds are known compounds, which were identified by spectral analysis (IR, MS, <sup>1</sup>H NMR, <sup>13</sup>C NMR) and chemical

evidence as 14 $\alpha$ -hydroxy-7, 15-isopimaradiene-18-oic acid; 16 $\alpha$ , 17-dihydroxy-3-oxophyllocladane (2); 8, 11, 13, 15-abietatriene-18-oic acid (3); 6 $\alpha$ -hydroxynidorellol (4).

## CONCLUSION

Representatives of four classes of diterpenoids were isolated from *C. pedunculata*, whereas, only 2 had been previously isolated from this genus. Compound 1, 3 and 4 have been reported from many other sources, such as 1 from *Salvia greggii* (Labiatae), 3 from *Larix kaempferi* (Pinaceae), 4 from *Stevia monarda daefolia* (Compositae). This work is the first example of the co-occurrence of four types of diterpenoids in a single species of Verbenaceae. The diversity of diterpenoids in *C. pedunculata* is similar to that in some Labiatae species.<sup>29</sup> However, the plants of Verbenaceae usually produce iridoid compounds and often the phenolic glycoside orobanchin but have a low occurrence of diterpenoids.<sup>29-31</sup> The isolation of the four diterpenoids suggests that genus *Callicarpa* (Subfam. Viticoideae Briq) should be separated from Verbenaceae or be placed in Labiatae.

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