Halleridone and Hallerone from *Phyla nodiflora* as taxonomic markers

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1. Subject and source

In continuation of our search for biologically active molecules from terrestrial sources, we have investigated the creeping perennial herb *Phyla nodiflora* (Linn) Greene (Verbenaceae) ( = *Lippia nodiflora* (Linn.) Mich), which grows widely in India. The leaves of *P. nodiflora* were collected from Bhadrachalam forest in October 1998. The plant was identified by Prof. M. Prabhakar, Plant Anatomy and Taxonomy Laboratory, Department of Botany, Osmania University, Hyderabad. The herbarium of the same is deposited at Herbarium Hyderabadiensis (H. Hy) (Accession No. 7078) and also at Indian Institute of Chemical Technology, Hyderabad, India.

2. Previous work

Several flavonoids (Tomas-Barberan et al., 1987), iridoid glycosides (Rimpler and Sauerbier, 1986) and volatile constituents (Elakovich and Stevens, 1985) have previously been reported from *P. nodiflora*.
3. Present study

The dried and powdered leaves (650 g) were extracted with CH$_2$Cl$_2$ : MeOH (1 : 1, 3 x 1.5 l) at room temperature. The combined concentrated extract was subjected to silica gel chromatography to afford the cyclohexenone-derived compound, halleridone (40 mg) (1) and a mixture. The mixture was acetylated (Ac$_2$O/Py) and purified on column chromatography to afford the acetyl derivatives 1a and 2a of halleridone (1) and hallerone (2). The compounds 1, 1a, and 2a were characterized by comparing their physical and spectral data with those reported in the literature (Messana et al., 1984).

Compounds 1 and 2 were previously isolated from the plant Helleria lucida (Messana et al., 1984) and were found to have anti-cancer, anti-tumor (Nishino and Kobayashi, 1989), anti-microbial, anti-fungal, and cytotoxic activities (Nishino et al., 1988). This is the first report of the isolation of these compounds from P. nodiflora.

4. Chemotaxonomic significance

Cornoside (3), a cyclohexadienone glycoside has previously been isolated from the genus Phyla (Rimpler and Sauerbier, 1986). These cyclohexadienone and cyclohexenone derivatives may be useful taxonomic markers of this genus Phyla.

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References