

Short Communication

Secondary metabolites from *Nepeta juncea*

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The study of the phytochemical investigation on the chemical constituents of the whole plant of *Nepeta juncea* belonging to the family Lamiaceae resulted in the isolation and characterization of 11 compounds. Nine of these compounds were identified as ursolic acid, oleanolic acid, β -sitosterol, stigmasterol, stigmasterol glucoside, 5,4-dihydroxy-3,6,7-trimethoxyflavone, (-)-6 β -hydroxy-15,16-epoxy-5 β , 8 β , 9 β , 10 α -cleroda-3,13(16),14-trien-18-oic acid, glutinol and β -amyrin. These compounds were individually identified by different spectroscopic techniques and by comparisons with reported data. This study constitutes the first phytochemical work on *Nepeta juncea*.

Key words: *Nepeta juncea*, Lamiaceae, natural products.

INTRODUCTION

The multi-regional genus *Nepeta* comprises about 300 species occurring in Asia and Europe. The greatest diversity and richness of species is found in two areas; Southwestern Asia, especially Iran, and the Western Himalayas including Hindukosh (Pojarikova, 1954). It is one of the largest genera of the Lamiaceae. *Nepeta* belongs to the subfamily Nepetoideae and tribe Menthaceae. The genus *Nepeta* (also called *Glechoma* and *cataria*) is named after the ancient Italian city of Nepi (Jamzed et al., 2003). The members of this genus are called Punesa in Iran (Cantino et al., 1992). About 67 species of genus *Nepeta* are found in Iran (Simonovic, 1959) and 58 in Pakistan (Zargari, 1990). Members of the genus *Nepeta* are sub-shrubs, perennial or annual herbs, monoecious or dioecious and usually aromatic in nature. There are over 200 species of the genus *Nepeta* in Eurasia. This is the largest Labiatae genus by far in Pakistan with a mixture of some very clear-cut species and others extremely polymorphic (Mozaffarin, 1996).

Previously, one new diterpene aldehyde along with benzene derivative of ester (Hussain et al., 2009) and biological activities of crude extract was reported

(Hussain et al., 2009). No more work has been reported till date.

MATERIALS AND METHODS

For THE experimental investigations, the whole plant of *N. juncea* was dried in the dark, chopped and ground to coarse powder. The powdered plant (4 kg) was initially extracted with methanol (MeOH; 7 days \times 3) at room temperature. The combined methanolic extract was then evaporated under reduced pressure leaving behind a greenish, syrup residue (150 g). The methanol extract was partitioned in various fractions through separating funnel. It was partitioned into n-hexane (30 g), chloroform (CHCl₃) (50 g), ethyl acetate (EtOAc, 20 g), n-butanol (10 g) and water fractions (40 g), successively. The residue obtained of ethyl acetate (20 g) was subjected to column chromatography on silica gel using n-hexane, n-hexane-EtOAc, EtOAc-MeOH and finally pure MeOH as the mobile phase, all of which yielded four fractions (F1 to 4).

RESULTS AND DISCUSSION

From the fractions obtained, it was found that F3 (3 g) yielded the compounds ursolic acid (Figure 1a) (An et al., 2005) and oleanolic acid (Figure 1b) (Akuta and Itokawa, 1988) while F4 (5 g) yielded β -sitosterol (Figure 1c), stigmasterol (Figure 1d) (Habib et al., 2007), stigmasterol

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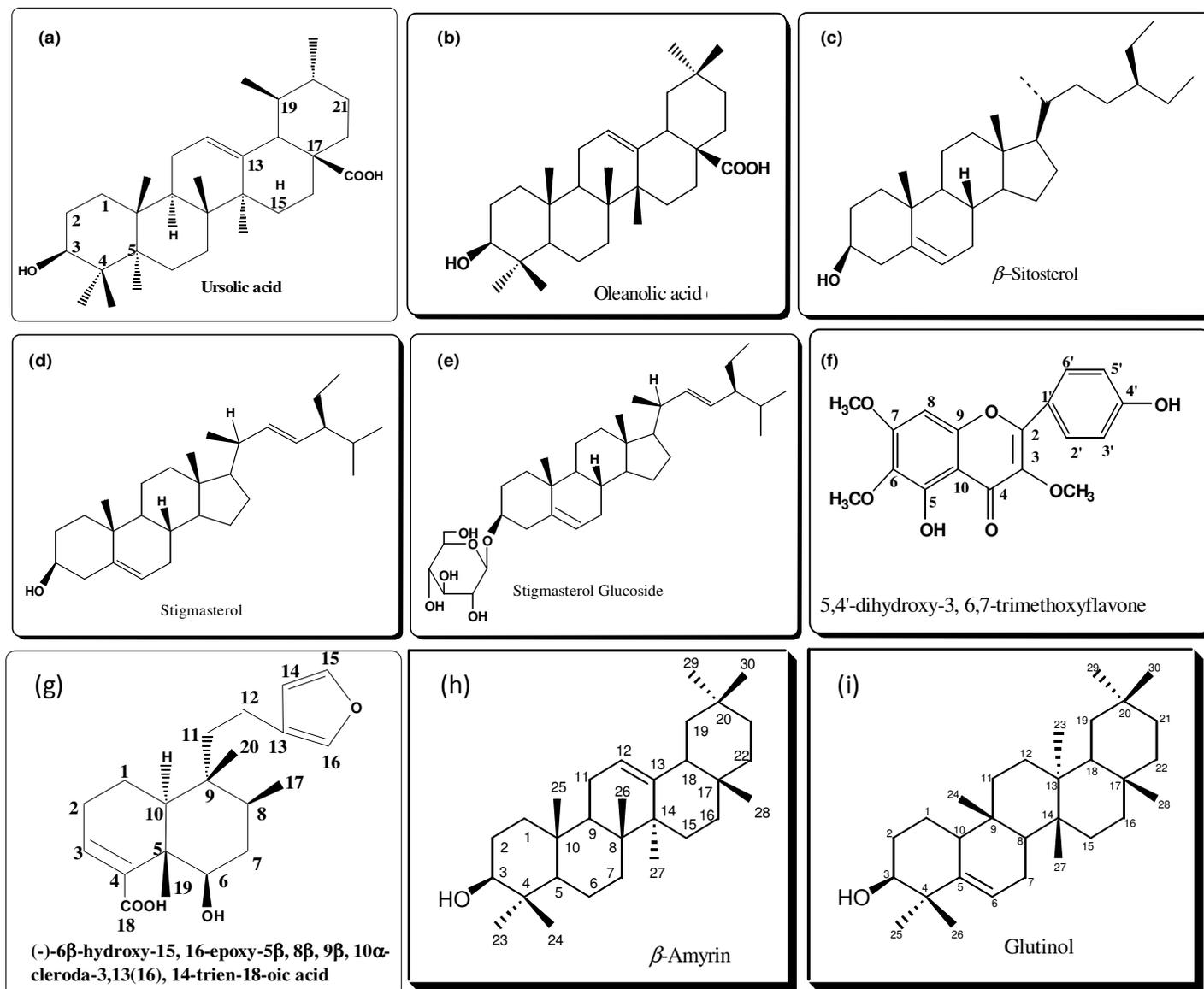


Figure 1. Structures of the nine compounds isolated from *Nepeta juncea*.

glucoside (Figure 1e) (Sadikum et al., 1996), 5,4'-dihydroxy-3,6,7-trimethoxyflavone (Figure 1f) (Voin, 1983, Flores and Herran, 1958), (-)-6 β -hydroxy-15,16-epoxy-5 β ,8 β ,9 β ,10 α -cleroda-3,13(16),14-trien-18-oic acid (Figure 1g) (Budzikieweiz et al., 1963; Fuchino et al., 1995; Siddiqui et al., 1988), β -amyrin (Figure 1h) (Gonzalez et al., 1987) and glutinol (Figure 1i) (Heupel, 1985). This report describes for the first time the occurrence of these nine compounds in *N. juncea*.

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