

# Chemical constituents of *Tragopogon porrifolius* L.

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## Abstract

The phytochemical investigation of the aerial parts of *Tragopogon porrifolius* L. yielded two known caffeic acid derivatives: chlorogenic acid (**1**) and 4,5-dicaffeoylquinic acid (**2**), two known flavonoid glycosides: vitexin (**3**) and orientin (**4**) and one coumarin: scopoletin-7-*O*-glucoside (**5**). The extract of the roots yielded the bibenzyl derivative 3,5,4'-trihydroxystilbene-3-*O*- $\beta$ -D-glucoside (**6**). The structures of these compounds were determined on the basis of spectral data and chemical evidence. 3,5,4'-Trihydroxystilbene-3-*O*- $\beta$ -D-glucoside was reported from *Dryopteris sublaetam* a pteridophyte. This is the first report of 3,5,4'-trihydroxystilbene-3-*O*- $\beta$ -D-glucoside from a flowering plant.

## Introduction

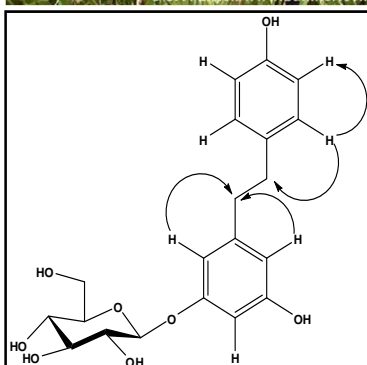
*Tragopogon porrifolius* L. (Asteraceae) is a native plant of the Eastern and Central Mediterranean region and of Asia Minor. Commonly known as purple salify, it is a biennial plant, growing to 3-4' height with alternate linear to lanceolate leaves, clasping the stem and milky sap. It is also used as a vegetable (Richardson 1976). Previous phytochemical investigation of this species has been reported on flavonoids (Kroschewsky et al. 1969), acylated saponin (Warashina et al. 1991), bibenzyls and dihydroisocoumarins (Zidorn et al. 2005). The present study is the isolation and identification of its further secondary metabolites.

**Table 1** NMR spectral data of compound **6** ( $\delta$  in ppm.)

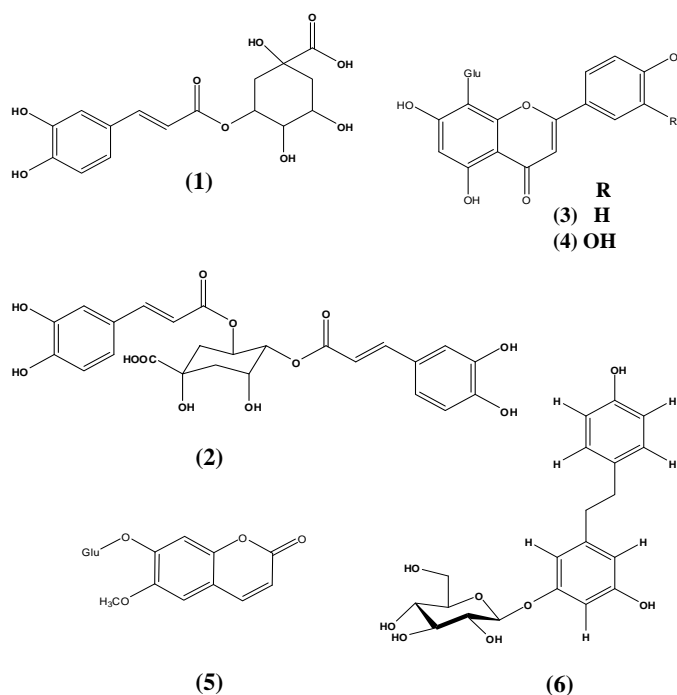
Position	<sup>1</sup> H NMR	<sup>13</sup> C NMR
<b>Bibenzyl moiety</b>		
1	-	129.4
2	6.36	101.50
3	-	159.58
4	6.39	108.14
5	-	158.94
6	6.28	109.60
alpha	2.73	38.42
beta	2.75	36.96
1'	-	133.10
2', 6'	6.96 (7.67)	129.32
4	-	155.46
3', 5'	6.66 (7.67)	114.93
<b>Glucose moiety</b>		
1	4.78	101.18
2	3.45	76.92
3	3.40	76.92
4	3.42	73.84
5	3.38	70.28
6	3.87 (11.5) 3.69 (11.5)	61.39

Measure in CD<sub>3</sub>OD (<sup>1</sup>H at 300 MHz and <sup>13</sup>C in MHz)

Reference of solvent signal at 3.31 ppm <sup>1</sup>H and 49.0 ppm <sup>13</sup>C



**Fig. 2** Important COSY correlation observed for compound **6**



**Fig. 1** The structure of compounds from *T. porrifolius*

## Result

The EtOAc fraction (5.0 g) of dried areal part of *T. porrifolius* were fractionated by silica gel and repeated sephadex LH-20 column chromatography to yield two known caffeic acid derivatives: compound **1** (2.8 mg) and compound **2** (5.6 mg), two flavonoid glycosides: compound **3** (4.0 mg) and compound **4** (11.5 mg) and coumarin **5** (2.6 mg).

The methanol extract of the roots were fractionated by silica gel and repeated sephadex LH-20 column chromatography to yield enriched mixture of compound **6** (1.5 mg) which was further purified by preparative reverse phase HPLC. The structures isolated compounds were established on the basis of UV, EIS-MS, 1D and 2D NMR data.

Compounds **5**, **6** were isolated from *T. porrifolius* for the first time and this is the first report of 3,5,4'-trihydroxystilbene-3-*O*- $\beta$ -D-glucoside which was found from *Dryopteris sublaetam* a pteridophyte (Feng, 2005) from a flowering plant.

The occurrence of bibenzyles in *T. porrifolius* confirms phylogenetic correlation between genus *Tragopogon* and *Scorzonera*, because bibenzyl derivatives were also found in *T. orientalis* and *S. humilis* (Zidorn et al. 2002), and all three species are members of subtribe Scorzonnerinae.

## Reference

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