

COMPOSITION OF THE ESSENTIAL OIL OF *Pastinaca sativa* L. SUBSP. *urens* (REQ. EX GODRON) CELAK

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UDC 547.913

The genus *Pastinaca* (Umbelliferae) is represented in Turkey by five species and altogether seven taxa: *Pastinaca sativa* L. subsp. *urens* (Req. ex Godron) Celak, *Pastinaca armena* Fisch. & Mey, *Pastinaca armena* Fisch. & Mey. subsp. *armena*, *Pastinaca armena* Fisch. & Mey. subsp. *dentata* (Freyn & Sint.) Chamberlain, *Pastinaca pimpinellifolia* Bieb., *Pastinaca zozimioides* Fenzl (endemic), *Pastinaca glandulosa* Boiss. & Hausskn. [1].

The root of *Pastinaca sativa* L. (Parsnip in English, Karakok, Yabani havuc in Turkish) is a commercial crop traded and used in Europe [2]. The root essential oil has previously been reported to contain terpinolene (40–70%) and myristicin (17–40%) as the main constituents [3–5].

The occurrences of hydrocarbons and coumarins in the seeds were also reported [6, 7].

Here, we report on the composition of the essential oil of crushed seeds of *Pastinaca sativa* L. subsp. *urens* (Req. ex Godron) Celak.

To the best of our knowledge, there is no previous study on the fruits of *Pastinaca sativa* subsp. *urens*.

In the present study, in the oil of crushed seeds of *Pastinaca sativa* subsp. *urens*, 18 components were characterized representing 95% of the oil with octyl butyrate (79.5%) and octyl hexanoate (5.3%) as the major constituents.

The compounds identified in the oils are listed in Table 1.

TABLE 1. Composition of the Essential Oil of *Pastinaca sativa* subsp. *urens*

| Compound | RI | % |
|-----------------------------|------|------|
| Butyl butyrate | 1230 | 0.1 |
| (Z)- β -Ocimene | 1246 | 0.2 |
| Octanal | 1296 | 0.3 |
| Hexyl butyrate | 1424 | 3.3 |
| Octyl acetate | 1483 | 0.3 |
| Decanal | 1506 | 0.6 |
| Octanol | 1562 | 1.4 |
| Octyl butyrate | 1624 | 79.5 |
| α -Zingiberene | 1726 | 0.1 |
| Decanol | 1766 | <0.1 |
| β -Sesquiphellandrene | 1783 | 0.1 |
| <i>ar</i> -Curcumene | 1786 | 0.1 |
| Octyl hexanoate | 1827 | 5.3 |
| Decyl butyrate | 1830 | 1.3 |
| Benzyl butyrate | 1889 | 0.1 |
| Phenylethyl butyrate | 1981 | 2.2 |
| (E)-Nerolidol | 2050 | 0.1 |
| Phenylethyl hexanoate | 2196 | 0.1 |

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Pastinaca sativa L. subsp. *urens* (Req. ex Godron) Celak. was collected in Kastamonu: Ilgaz mountain on September 20, 1996. Voucher specimens are kept at the Herbarium of the Faculty of Science and Letters at Gazi University in Ankara, Turkey. Dried fruits of *Pastinaca sativa* subsp. *urens* were crushed and hydrodistilled using a Clevenger-type apparatus for 3 h. The percentage yield was 2.5% on a moisture – free basis.

The GC/MS analysis was carried out using a Hewlett-Packard GC-MSD system. An innowax FSC column (60 m × 0.25 mm i.d.) was used with helium as the carrier gas. The GC oven temperature was kept at 60°C for 10 min and programmed to 220°C at a rate of 4°C/min, and then kept constant at 220°C for 10 min. The split ratio was adjusted at 50:1. The injector temperature was at 250°C. MS were taken at 70 eV in the EI mode. Mass range was from *m/z* 35 to 425. Percentage amounts were computed by the instrument from Total Ion Chromatogrammes. Library search was carried out using Wiley GC/MS Library and BASER Library of Essential Oil Constituents.

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