

## A new location of *Hypericum tetrapterum* (St. Peter's wort) in Azerbaijan flora

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### Abstract

The flowering plant *Hypericum* is one of nine (*Cratoxylum*, *Eliea*, *Harungana*, *Lianthus*, *Santomasia*, *Thornea*, *Triadenum* and *Vismia*) genera of the family *Hypericaceae* Juss. The majority species of the family belonging to this genus. The species of this genus occur as herbs, shrubs and infrequently trees which are found in almost all kind of temperate regions. In flora of Azerbaijan are cited 19 spontaneous species and one subspecies belonging to this genera, while R. Rzazade (1955) in Azerbaijan's flora mentioned only 15 species. One of them is *H.tetrapterum* Fries. The present article is part of a complex experimental study which comprises morphology, systematic, geographical research studies *H.tetrapterum* Fries in flora of Azerbaijan.

**Keywords:** *Hypericum*, genera, shrubs, morphology, temperate regions

### Introduction

*Hypericum* is one of the large herbal plants in the family *Hypericaceae* Juss. According to the pharmacological properties of their active compounds (hypericine, pseudo-hypericine) this genus have been used in traditional medicine for centuries. In Azerbaijan folk medicine species of this genus (under the names "dazi") are used as regenerative, antiseptics, anti-inflammatory, anti-depressive activities and healing agents. *Hypericum* L. comprises (500 species) a wide range of life-forms, ranging from annuals to perennial shrubs, herbs (47%) and small trees. Most species are entirely glabrous with entire opposite leaves from ovoid to elongate or to linear (with glandular dots or canals), stems 2-4 lined with 3-5 bundles, symmetrical homostylous flowers, polypetalous corolla, sepals in number 5 or 4 with margin entire to eglandular-fimbriate, contorted (lemon to orange yellow) petal aestivation (4-5 free), an ovary with slender styles and red small stigma, capsular fruits and dark brown to yellow brown cylindrical seeds without endosperm. Two distinct types of glands have been identified in this genus. The first type which called dark glands is characterized by clusters of specialized cells (in color black to reddish). The second type is pale glands (clear to amber). *H.tetrapterum* Fries. a perennial herbs that belongs to the morphologically most primitive section *Hypericum* of the genus. A characteristic feature of the section – contains perennial herbs and very few subshrubs with dark glands glabrous, erect to prostrate stems. Leaves opposite, 3 whorled, sessile with intramarginal black glands. Flowers stellate, homostylous. Species from this section has 5 sepals (margin with denticulate to glandular-ciliate glands), 5 erect without apiculus petals, 3 stamen fascicles with 20-100 stamens.

### Materials and Methods

In the course of the expedition (2019-2020), in two districts of the Republic areas we found this species. Plant materials were collected from Lankoran (National park Hircan, Dasdatuk village) districts, between May and August at different stages of plant development. During this expedition we also, find a new distribution of this species in high mountain ranges of Lesser Caucasus (Gedebek districts, Soyudlu villages). Also the herbarium specimens

stored in the Herbarium fond of the Institute of Botany ANAS (BAK) were used in this study. Classic comparative morphological methods and result of molecular-phylogenetic analysis were used for identification of this (*Hypericum tetrapterum* Fries.) species



Fig 1: *H tetrapterum* Fries

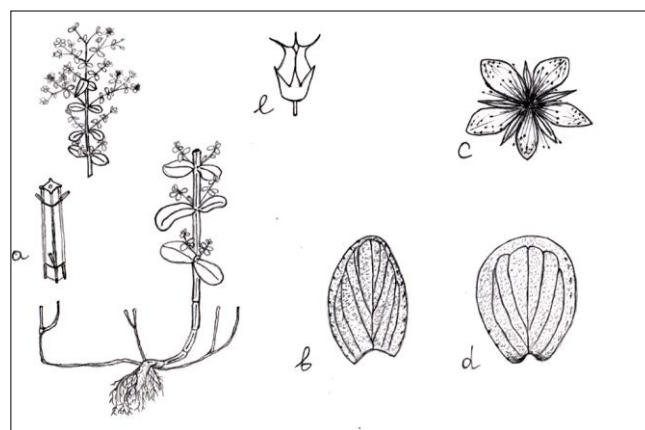


Fig 2: Morphological characteristics of *H.tetrapterum*: a. stem; b. leaf; c. flower; d. petal; e. capsule

## Discussion

The aim of the work is to study the comparative-morphological and systematic features of this species. *Hypericum tetrapterum* or St. Peter's wort is a rhizomatous, glabrous medicinal plant species in the family *Hypericaceae* Juss. *H.tetrapterum* Fries., 1895. Шмалъг. Фл. 1:171; 1949. С. Г. Горшкова. Фл. СССР. 15:242; 1932. А. А. Гроссгейм. Фл. Кавк. 3: 69; 1909. Воронов Мат. Фл. Кавк. 9. 3: 93; 1966. P. H. Davis. Fl. of Turkey. 2: 399; – *H.quadrangulum* L. 1753. Sp. Pl.: 785. – *H.acutum* Moench. 1955. Рзазаде во Фл. Азерб. 6: 254. – perennial herb (60-90 sm tall), erect to decumbent. Stem square, 4 winged with black glands. Leaves are simple, entire, sessile, ovate or elliptic with pale laminar and black intramarginal glands. Inflorescence cylindric to corymbiform. Flowers 10- 14 mm in diam., stellate. Peduncle lanceolate. Sepals equal, five in number, lanceolate to narrowly oblong, entire, acute with laminar and marginal glands. Petals 5, pale yellow, entire with black and pale marginal glands. Stamens 30-50, 3 fascicled. Ovary narrowly ovoid, with free shorter 3 styles. Capsule narrowly cylindrical-ellipsoid to ovoid with linear vittae valves. Seeds cylindric, dark brown. Flowering time from July till August. The seeds ripen from August to September. The main part of the area of the species covers the territory of Europe, Turkey, Caucasus, Iraq, Iran. Described from Europe. Typus: << Skane, in silva Resten, 1819, E.Fries >> (UPS). In Azerbaijan: Lankaran. – from the lower to the middle belt (up to an altitude of 1400 m) and Gedabek, not to be cultivated. *H.tetrapterum* Fries. is a native to the Azerbaijan. The population density of this species is low, in nature found isolated copies or small groups. This perennial species grows in damp to wet habitats marshes, streamsides, open ditches, wet meadows and springs. The species of this genus contains essential oils (terpens, terpenoids, phenolic), hypericin, pseudo-hypericin and quercitrin. In folk medicine, above ground parts of plants are used for medicinal (such as headaches, nervous system, wounds, skin scars) purposes.

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