

Taxonomic Revision of *Fumaria Indica* (*Fumariaceae*) from Pakistan

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Abstract– The available record of the species *Fumaria indica* for Pakistan has been revised and updated. The revision has been done in case of nomenclature, local names, specimens examined, flowering and fruiting times, medicinal importance and their geographical distribution.

Keywords– Taxonomic Revision, *Fumaria*, Medicinal Importance and *Fumariaceae*

I. INTRODUCTION

As a result of reviewing representatives of the species *Fumaria indica* (Hausskn.) H. N. Pugsley, within the limits of the Western Himalayas and adjoining regions, the species is described as annual rarely perennial often scandent herb, glabrous or subglabrous, glaucous, with almost cauline leaves, irregularly 2-4 pinnatisect with many usually very narrow segments. Racemes short, generally leaf-opposed, bracteolate; bracts often short, linear, rarely as long or slightly longer than pedicel. Flowers small, zygomorphic, yellow, very much like *Corydalis* but spur very short. Sepals 2 or obsolete. Petals 4, only the upper spurred; spur much shorter than the lamina; inner 2 narrower than the outer ones; lower petal keeled. Ovary unicellular, usually suborbicular with 1 (-2) ovules on each placenta; style short, often filiform with entire to somewhat lobed stigma. Fruit a one seeded, ± globose nut, rugulose or smooth when dry, with 2 apical pits; seed usually large, suborbicular, brownish. A difficult species, affected by light and shade conditions. Flower colour fades under preserved condition and must be noted when fresh. The fruit is sometimes joined by the expanded top of the pedicel by a narrow fleshy neck, distinct only in fresh conditions, which also must be noted during the time of collection.

Linnaeus (1753) first described 11 species of *Fumaria* out of which only one species (*F. officinalis*) occurs in Pakistan. This polymorphous group of plants was subdivided by different authors into numerous genera, and, by the year 1853, no fewer than 11 generic names had been assigned to that group of plants popularly known as bleeding hearts alone.

Hooker, J. D. (1875) described 1 species of *Fumaria* Linn., of the subcontinent. Komorov (1937) also described 11 species from USSR. Tutin et al. (1964) described 33 species from Europe. Davis (1965) has also described 15 species of *Fumaria* Linn. Stewart (1972) also listed 2 species of the genus from Pakistan and Kashmir. Jafri (1974) described 2

species from Pakistan and Kashmir.

II. MATERIALS AND METHODS

Plant specimens were studied from Herbarium of Quaid-i-Azam University, Islamabad (ISL) and the Herbarium of Pakistan Museum of Natural, History, Islamabad (PMNH). Many collections have been made in the course of author's field studies. The voucher specimens were deposited in the Herbarium of Quaid-i-Azam University, Islamabad.

A microscope (ZEISS) was used for morphological studies which gives a magnification of 10x X 0.7-3x, thus enlarging the image by 7-30 times.

III. RESULTS AND OBSERVATION

Fumaria indica (Hausskn.) Pugsley in Journ. Linn. Soc. Bot. 44: 313. (1919); Jafri, Flora of West Pakistan.73:39. (1974).

Syn.: *Fumaria parviflora* W. A. (1834) non Lam; Hook. f., Fl. Brit. Ind. I:128.(1872); Burkill, List .Fl. Pl. Baluch.(reprint ed.). 7. (1956).

Basionym: *F. vaillantii* Loisel var. *indica* Hausskn. in Flora, 56:443.

An erect herb ca. 7-3 cm tall, having, herbaceous branches. Stem is ridged having furrows, glabrous, pale, brown, brownish, sedge green. Radical leaves petiolate, petiole is 1-7 cm long, decomposed, pinnatifid, lamina outline ovate, orbicular, 1.5-5x1-3 cm; pinnae lobes obovate, orbicular, attenuate, oblique, cuneate, petiole is 1 to 15 mm long; lobule linear, oblong, 0.56x0.51 mm, acute, mucronate; both surfaces of leaves are sedge green. Cauline leaves petiolate, petiole is 0.8-6 cm long, decomposed, pinnatifid, lamina outline elliptic, ovate, orbicular, 1.5-7x1-7cm; pinnae lobes obovate, orbicular, attenuate, oblique, cuneate, petiole is 1-13 mm long; lobule linear, oblong, 0.5-6x0.5-4mm, acute, mucronate; both surfaces of leaves are sedge green. Raceme is 0.7-4.5 cm long, 5-23 flowered, and peduncle is 0.2-1.7 cm long; bract lanceolate, 1-2.5x0.5-1 mm long, membranous. Flowers yellow, 4-6 mm long including spurs, downwardly curved, 1-1.5x0.5-1mm, petal lobe is longer than spur lobe (3-4.5:1-1.5mm long). Sepals 2, caudocous, imbricate; petal 4, 3-4.5x0.5-1 mm, imbricates, upper & lower petal tips are suborbicular while inner are coherent at tips, lower are

narrow. Stamens 6, diadelphous, 3 on each side of carpel; filament 2.5-3 mm long, anther 0.2-0.5mm long, middle anther ditheous and lateral monotheous. Carpel ellipsoid, glabrous, ovary 1-1.5mm long, stigma 0.5-1 mm long, style 1.5-3 mm long. Nut suborbicular, rounded, rugose, 2x2mm; seeds somewhat rounded brown, 1 in number, 1mm in diameter.

English Name: Fumitory

Local Name: Murghipal, papra

Flowering and fruiting Period: March- June.

Geographical Distribution: India, Pakistan, Afghanistan & C. Asia; introduced elsewhere.

Ecology: Grows along railway tracks and wheat fields.

Medicinal importance: The plant is crushed and mixed with sugar, and then it is used for allergies and blood purification. It is used as digestive and antipyretic.

Specimens examined:

N.W.F.P.: Bannu: Mira Khel, 20.3.1980, M.Zubair 116756 (ISL); Lakki Marwat, 16.3.1977, Shahzad and Dilawar 45784 (ISL); N.Waziristan: Dosali, 25.6.1977, Hafiz Ullah & Ayaz 57547 (ISL); Kohat: Nusrat khel, 23.4.1977, Hafizullah & Dilawar 48834 (ISL); Bilitong, 22.4.1977, Hafizullah & Dilawar 49967 (ISL); Takhti Nusrathi, 4.1977, Hafizullah & Dilawar 53544 (ISL); Tal, 20.5.1977, Hafizullah & Ayaz 54796 (ISL); Peshawar: Peshawar university, 5.4.1976, M.A.Siddiqi 17328 (ISL); Warsak, 13.4.1977, Muqarrab Shah & Ayaz 48832 (ISL); Swat: Mngrore, 1.5.1976, Muqarrab & Dilawar 41348 (ISL); **Punjab:** Attock: Qutbal, 28.3.1978f, Shahzad Iqbal & Maqsood 81295 (ISL); Gotkai, 6.4.1988, Zabta Khan, M.Idrees et al. 020005 (ISL); Naugazi, 2.3.1988, Saleem, Zabta Khan et al. 019109 (ISL); Rawalpindi: Bakra mandi, 28.10.1977, Arif & Maqsood 75339 (ISL); Sports complex, Islamabad, 5.1.1978, Ayaz & Afzal 75926 (ISL); Noorpur shah, 26.3.1979, Wali & Zawar 104421 (ISL); Aabpara, 13.2.1978, M.Afzal & Akram 76576 (ISL); University campus, M.Ashraf & Dilawar Khan 17330 (ISL); Islamabad, 14.3.1977, Maqsood & Arif 53530 (ISL); University campus, 12.3.1976, Hoor Jahan 17327 (ISL); Gujjar khan, 21.3.1978, A. Saboor, Manzoor, Maqsood, Akram 88720 (ISL); Rahimyar khan: Khanpur, 27.2.1977, Mir Ajab & Manzoor 45773 (ISL); Multan: Lodhran, 24.2.1977, Mir Ajab & Manzoor 45766 (ISL); Mianwali: Kalabagh, 6.3.1977, Shahzad & Ayaz 45786 (ISL); Campbellpur: Lawarencepur, 8.4.1977, Muqarrab Shah & Ayaz 48824 (ISL); 5miles from

Fateh jang, 12.2.1977, Shahzad, Mir Ajab et al. 43034 (ISL); Burhan, 21.3.1977, M.Ajab, Ashraf et al. 48709 (ISL); Hattian, 9.3.1977, Shahzad & Iqbal 45781 (ISL); Lahore: Lahore, 8.12.1982, M.Rashid Awan & Khalid Saeed 4109 (PMNH). **F. Area:** Capital Area: G-6/2, Islamabad, 26.4.1982, M.K.Laghari 2773 (PMNH); CDA Nursery, Islamabad, 3.3.1981, S.Malik 169 (PMNH); 5Km ----Samli dam -Barakaho, 2.3.1997, Mrs.S.Malik & M.Latif 027229 (PMNH); Panwal, 23.3.1983, M.Javed Iqbal & Khalid Saeed 4768 (PMNH); **A. Kashmir:** Mirpur: Chichian, 11.4.1977, Sahzad & Arif 53535 (ISL). **Sindh:** Hyderabad: Taunoli Mohammad khan, 2.3.1977, Abdul Saboor & Nisar 45775 (ISL); Kharpur: Superior science college Khairpur, 6.3.1977, Abdul Saboor & Nisar 45787 (ISL). **Baluchistan:** Nushki: Nushki, 22.4.1978, Manzoor Hussain & M.Arif 88736 (ISL); Quetta: Ran Bagh, 21.4.1976, Iqbal Dar & M.Arif 41342 (ISL); Orak lake, 30.4.1977, Manzoor & Maqsood 54793 (ISL); Kolpur, 11.4.1978, Manzoor, Arif 89871 (ISL); Pishin: Pishin, 13.4.1978, Manzoor Hussain & M.Arif 89872 (ISL); Sibi: Sunjani, 6.6.1978, Manzoor Hussain & Dilawar Khan 88741 (ISL).

IV. DISCUSSION

Fumaria indica is affected by light and shade conditions. Sometimes plant grown in shade has small cleistogamous flowers and a typical leaf segment. Flower colour fades in preserved specimens therefore it should be noted in fresh condition.

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Figure 1: *Fumaria indica* (Hausskn.) H. N. Pugsley.: A fruiting branch.