

ARGEMONE (PAPAVERACEAE), A NEW GENUS FOR THE FLORA OF IRAN

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The genus *Argemone* is recorded by the species *Argemone ochroleuca* as a new genus for the flora of Iran. The specimens have been collected from Jiroft in Kerman Province, southeast of Iran. Description, localities, habitat, and geographic distribution are discussed. The images of plant in its natural habitat and of the herbarium specimen are presented.

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Argemone جنسی جدید برای فلور ایران

منصور میرتاج الدینی: عضو هیئت علمی بخش زیست شناسی دانشگاه شهید باهنر کرمان

فرزانه اکبری: دانشجوی کارشناسی ارشد بخش زیست شناسی دانشگاه شهید باهنر کرمان

الهام حاتمی: دانشجوی دکتری بخش زیست شناسی دانشگاه شهید باهنر کرمان

جنس *Argemone* بوسیله گونه *Argemone ochroleuca* به عنوان گزارشی از یک جنس نو برای فلور ایران معرفی می‌گردد. نمونه‌ها از منطقه جیرفت واقع در استان کرمان در جنوب شرق ایران جمع‌آوری شده‌اند. ویژگیهای ریخت‌شناختی، موقعیت مکانهای جمع‌آوری، رویشگاه و پراکنش جغرافیایی آن مورد بحث قرار گرفته است. همچنین تصویر گیاه در طبیعت و تصویر نمونه هرباریومی ارائه شده‌اند.

INTRODUCTION

Argemone L. is a genus of Papaveraceae with prickly stems, leaves and capsules (Otto & Verloove, 2016). Taxonomically, it is a difficult genus and the number of species ranges between 24 (Schwarzbach & Kadereit 1999) and 32 (Ownbey 1997). Closeness of relationships or independence among various species is indicated by their crossability and the fertility of their hybrids. The cytogenetic studies of *Argemone* have been subjects to many studies for determining ploidy levels of different taxa.

Members of *Argemone* are distributed in North and South America, Hawaii (Ownbey 1958, Ownbey 1961), Australia (Parsons & Cuthbertson 1992; Wilson & al. 1995), India (Ramakrishnan & Gupta 1972), several parts of Africa and Asia (Schwerzel & Mabasa 1986; Parsons & Cuthbertson 1992; Tamado & Milberg 2000; Häfliger & Wolf 1988). This genus includes 1 species (*A. mexicana*) in Flora Iranica area from Pakistan (Cullen 1966). In this investigation, the genus is

recorded for the flora of Iran by the species *A. ochroleuca*. This is the first record of this species for the flora Iranica area.

RESULTS

In studying of herbarium materials belonging to the family Papaveraceae, deposited in the Herbarium of Shahid Bahonar University of Kerman, preliminary identification of the collections was undertaken using Flora Iranica (Cullen 1966). The specimens have been collected in both flowering and fruiting phases. Then according to the keys presented in Flora of Pakistan (Jafri & Qaiser 1974), Flora of North America (Ownbey 1997) and Flora of India (Sharma 1993), they were identified as *Argemone*.

Argemone is different from other genera of Papaveraceae by several important features including the trimerous arrangement of floral parts (sepals, petals and carpels), the presence of sepal horns, the united styles and the dehiscence mode of capsules

(Ownbey1958-1961). They also have prickles on their stems, leaves and, capsules. The combination of the above characteristics forms the basis for taxonomic delimitation of the genus.

Argemone ochroleuca Sweet, Brit. Fl. Gard. 3: t. 242. 1828 (fig. 1)

Type: Cultivated in Britain by R. Barclay from seeds collected in Mexico, K.

Annual or biennial herb, totally glabrous, erect, up to 80 cm tall with bright yellow latex. Stems whitish green, glaucous, with prickles 3-7 mm long, bent downward at the base of stem. Leaves oblanceolate to oblong, deeply pinnatisect, the segments nearly oblong with gross and spiny teeth; basal leaves oblanceolate-oblong, 14-20 cm long and 4-5.5 cm wide, which are gradually terminating to petioles \mp 3 cm long; median leaves sessile or \mp amplexicaule, oblanceolate 5-16 cm long and 4-5 cm wide; upper leaves oblong, amplexicaule, 5-9 cm long and 4-5 cm wide. Flowers 3-7 cm in diameter, sessile, subtended by 2-3 foliaceous bracts; flower buds oblong, 17-20 \times 5-6 mm;

sepals 19 \times 10 mm; petals 6, whitish or pale lemon, obovate 27 \times 15 mm. Stamens numerous, 10-11 mm long; filaments pale yellow; anthers oblong, recurved, dark yellow. Ovary c. 8 \times 5 mm, style 1-2 mm long; stigma five-lobed, deeply dissected, dark red. Capsules ovoid-elliptic to narrow ovoid, 2.5 - 4.5 cm long (excluding style), 1.3 - 2 cm wide, with 10- 32 erect-patent spines per valve; spines 10-12 mm long. Seeds black, spherical 1.5 mm in diameter, finely reticulate.

Specimens examined: Iran, Kerman, south of Jiroft, between Jangalabad and Anbarabad, 630 m a. s. l., 06. IV. 2008, Mansour Mirtadzadini 1940; south east of Jiroft, near Hishin village, 1150 m a. s. l., 21. II. 2008, Mansour Mirtadzadini 1941 [Herbarium of Shahid Bahonar University of Kerman, Mirtadzadini's collection].

General distribution: The species is distributed in North America, South Africa, Egypt, Saudi Arabia, Yemen, Pakistan, India, China, Australia and Iran. It is common in semi sub-tropical and warmer temperate regions.

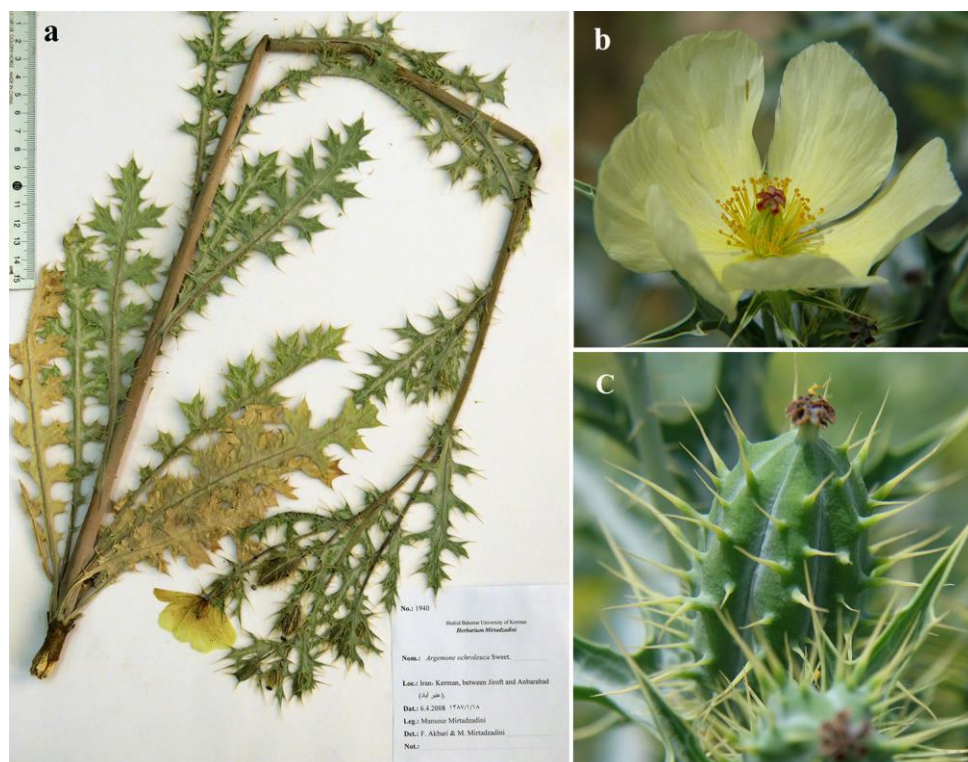


Fig. 1. *Argemone ochroleuca*, (a) herbarium sheet; (b) flower; (c) fruit. Photographs by M. Mirtadzadini.

DISCUSSION

Argemone ochroleuca have not previously been reported in the literatures related to the flora of Iran and

it is for the first time that a prickly genus of Papaveraceae is recorded for the flora Iran. *Argemone ochroleuca* has often been confused with *A. mexicana*

L. because of similarities in some morphological traits and close relationships between them. According to Flora Iranica the latter is recorded from Pakistan. Therefore, it is necessary to use a significant number of characters to distinguish one species from the other. In *A. ochroleuca* style is 1-3 mm long (in fruiting phase), flower buds are oblong, petals are pale lemon, capsules are narrow ovoid or ovoid-elliptic and stigma is deeply divided to narrow and widely spreading lobes, but in *A. mexicana* style is 0-1 mm, flower buds are subglobose, petals are bright yellow, capsules are oblong to broadly ellipsoid and stigma is not deeply divided.

The interesting point of geographic distribution of *Argemone ochroleuca* is its range in old world in Nubo-Sindian region from Egypt to India including Egypt (Boulos & El-Hadidi 1984), Saudi Arabia (Moussa 2012), Yemen (GBIF, 2015), Pakistan (Jafri & Qaiser 1974) and India (Sharma 1993). According to Zohary (1973), south of Iran including the locality of the examined specimens (south of Kerman) is part of this region and presence of this species in south of Iran as a connecting bridge between west (Arabian peninsula) and east (Indian subcontinent) is expected.

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