



Research Paper

The First Record of A medicinal Plant Species *Prosopis farcta* (Banks & Sol) .J.F.Macbr (Fabaceae; Mimosoideae) from Libya

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ABSTRACT

Prosopis farcta (Banks & Sol.) J. F. Macbr. has been reported for the first time from Libya. This species is native in Asia. Flowering specimens of *Prosopis farcta* collected from Sokna Region about 650 Km south-east Tripoli. It is presented with updated nomenclature, taxonomic description, geographical distribution, place of occurrence in Libya, and field colored photographs are also provided. The voucher specimens were deposited in the Herbarium of Botany Department (ULT), University of , Tripoli, Libya.

KEY WORDS: *Prosopis farcta* , Fabaceae, Mimosoideae, Syrian mosquito, New record.

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I. INTRODUCTION

The genus *Prosopis* L. (Fabaceae, Mimosoideae) includes nearly 45 to 50 species which are generally thorny trees or shrubs distributed in tropical and subtropical regions [1, 2, 3, 4].

The genus *Prosopis* are native to arid and semi-arid zones of the Americas, Africa and Asia, with several American species widely introduced throughout the world over the last 200 years. In recent decades these 'exotic' *Prosopis* have attracted much attention. They are extensively planted as fast-growing and drought tolerant fuel and fodder trees, but in many countries, they have also spread out of control as invasive weeds. However, because they grow wild and in abundance on common lands, they are a 'free' resource, especially important to poor farmers and the landless [5].

In Libya the only one cultivated species *Prosopis juliflora* was recorded in Tripoli, Zawia and Misrata [1]. In this paper a new record of *Prosopis farcta* will be added to the flora of Libya which will rise the number of *Prosopis* species in the flora of Libya to two species, one cultivated and one wild species. Due to its medicinal importance, it will be registered as a new medicinal plant, as many studies have indicated this importance. For instance, [6].indicated that *P. farcta* widely used by the general as a potent antioxidant and sugar regulator (Antidiabetic) for the maintenance of overall health. Moreover, recent research reported that the *P. farcta* fruit is used as a diuretic, for constipation, hemorrhoids, kidney stones, toothache, and skin problems [7].

II. MATERIALS AND METHODS

Plant specimens were collected from Sokna Region about 650 Km south-east Tripoli., (29° 03' 27.5'N , 15° 46' 43.0'E) (Fig.1). The collected specimens were treated with ordinary herbarium techniques (Pressing, drying, mounting, labeling). Plant identification and authentication procedure were carried out at the Herbarium of Botany Department (ULT), Faculty of Science, University of Tripoli using the data from the following [5, 8, 9, 10, 11, 12].The plant species was given voucher number (676022). The Voucher specimens were deposited in the same herbarium, with a duplicate sent to the herbarium of the Botany Department, Gharyan University, Gharyan, Libya.

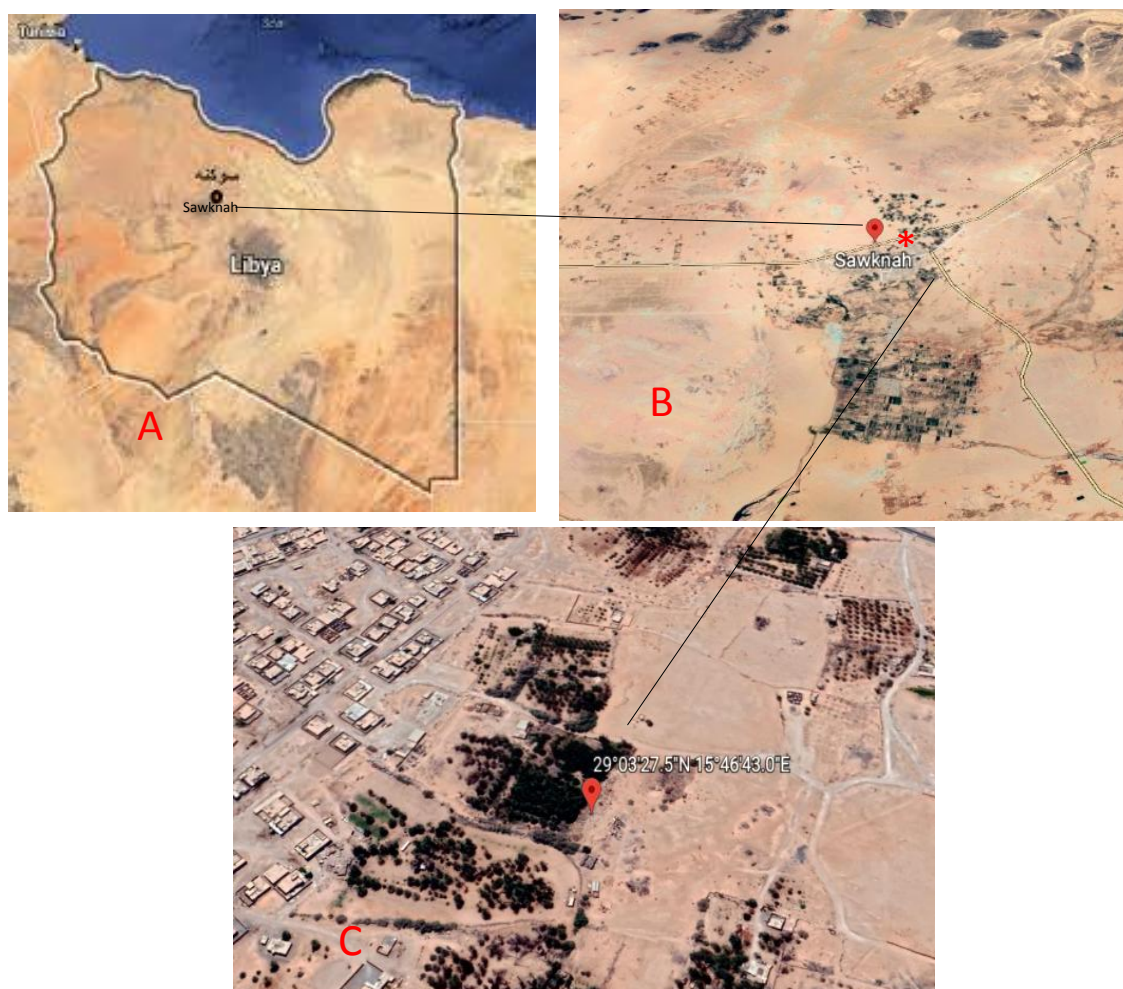


Figure 1. Map of Libya (A) and detailed map of the Sokna district (B) showing the locality where *Prosopis farcta* (red star) was collected & (C) Longitude and latitude Location.

Description of Species

Accepted name: *Prosopis farcta* (Banks & Sol.) J. F. Macbr.

Synonyms. *Lagonychium farctum* (Banks & Sol.) Bobrov.; *Prosopis stephaniana* Kunth. ex Spreng.; *Mimosa farcta* Banks & Sol.; *Mimosa stephaniana* M. Bieb. [13].

English common name: Syrian mesquite

A woody perennial dwarf shrub, usually 0.4-1m high, rarely reaches to 2-3 m. the root system and rhizomes can extend to a depth of 15-20 m into the soil. branches slender, whitish, armed with short pointed prickles, distributed on internodes. Leaf bipinnately compound, stipules lateral, caducous, herbaceous, oblong – arcuate, free, 2-3 mm long; rachis 1.8-3.0 cm long, pinnae 3-5 (7) pairs, c. 1.5-2.2 cm long, tip ending into a point, leaflets 9-13 (15) pairs, petiole 1 mm, lamina c. 3 – 7 (9) mm long, c. 1.5 (2.5) mm broad, oblong-lanceolate, very oblique, margin entire, tip acute, short hairy. Spike 6-10 cm long, auxiliary, pedunculate, many flowered, cylindrical. Pedicle 1 mm. Calyx c. 0.8 mm long, one fifth to one forth as long as corolla, glabrous, 5-toothed, teeth minute. Corolla (2) 4 – 5 mm, 5- parted, pale yellow; stamens 10, slightly excreted; ovary superior, many ovules, style filiform. Pod indehiscent, oblique, oblong, 1.2-2.5 (-4.0) cm long, 1.2 (-2.3) cm thick, dark brown to black, rugose, obtuse, contracted abruptly into the stalk, with thin or coriaceous exocarp and thick spongy-pulpy mesocarp, 1 or 2 on each fruiting spike; seeds numerous, compressed, ovoid, separated by cartilaginous or membranous. (Fig. 2).

Flowering time: From April-September.

The above description is based on herbarium specimens with the aid of the following literatures [5, 8, 9, 10, 11, 12].

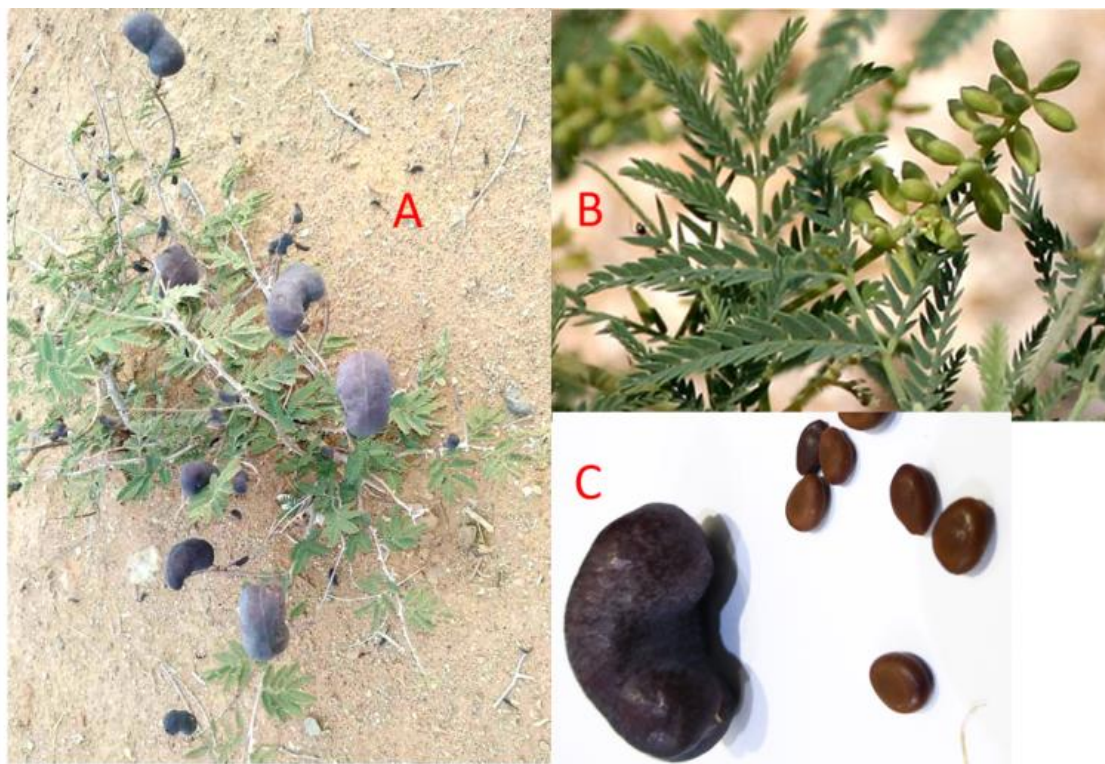


Figure 2. (A) *Prosopis farcta* shrub on its natural habitat of Sokna showing ripen fruits, (B) Branch of *prosopis farcta* with flower buds (C) Seeds after removing the solid pericarp of the fruit. Photographs by S.M. El-Ahamir.

Distribution: Pakistan, Russia Caucasus, Central Asia, Azerbejan, Afghanistan, Uzbekistan, Kazakhstan, Kirizstan, Turkmanistan, Tadhikistan, Gruzia, Iran, Saudi Arabia, Kwait, Iraq, Syria, Lebanon, Jordon, Palestine, Cyprus, Turkey, United Arab Emirates, Bahrain, Oman, Yemen, Egypt, Tunisia, Algeria). [13, 14]

Habitat:- *Prosopis farcta* does well in a wide range of soil types from clayey, dry soils, to deep alluvial soils with shallow ground water. It can tolerate saline soils and semiarid conditions.

Chromosome number:— Many of the data available to date suggest that *Prosopis* is essentially a diploid genus with a somatic chromosome number of $2n = 28$ [5, 15, 16, 17]

Distribution in Libya:— Sokna Region about 650 Km south-east Tripoli, $29^{\circ} 03' 27.5''N$, $15^{\circ} 46' 43.0''E$ S. El-Ahmir & Y. Azzu (ULT!, Gharyan University!) (Fig.3)



Figure 3. Herbarium specimen of *Prosopis farcta*. collected from Sokna region in Libya.

III. RESULTS AND DISCUSSION

A good understanding of natural regeneration in any plant community requires information on the presence and absence of re-growth after disturbances. Here, this study has found the new record plant species which was not included in the Libya flora before. *Prosopis farcta* (Banks & Sol.) J. F. Macbr. it was not found in both Jafri [1] and Kieth [18], which proves that it is a new record to the flora of Libya, hereby this research enumerates this species as part of the flora of Libya.

Prosopis farcta is stated for the first time in Sokna Region about 650 km south –east of Tripoli Libya, 29° 03' 27.5'N , 15° 46' 43.0'E (Fig.) . The distribution of *P. farcta* was commonly reported from India to Iran [5, 19], Turkey, Cyprus and Ukraine [5]. It is widespread in the Middle East and North Africa which is considered as a native species in Tunisia [4]. *P. farcta* is known to prefer growing in arid conditions and known to be salt-tolerant [4, 20]. The mode and time of its introduction and arrival to Libya remains unknown. It may

have been introduced by natural methods or as a seed contaminant, due to its presence in natural vegetation as well as in cultivated fields in Libya. *P. farcta* commonly was known as a traditional medicinal plant to dispose of kidney stone [7] which act as a crumbed natural substance. Leaves and beans of this species have been used for treatment of many diseases such as diabetes, prostate disorders, inflammatory diseases, measles, diarrhea and urinary diseases [19]. The species is easily recognized by one or two oblong pods on each raceme, which is dark brown, curved oval and leathery when ripe.

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REFERENCES

- [1]. Jafri S. M., El - Gadi A. A. (1976 – 1989) Flora of Libya, AlFaateh.University. Faculty of Sciences. Tripoli, Libya: Department of Botany.
- [2]. Harzallah-Skhiri, F., Ben Ouada, H., Bouzid, S., Dutuit, P. (2004) Diversite morphologique des populations a base de *Prosopis*, identification et evaluation de ces ressources genetiques. In: Ferchichi, A. (comp.) Rehabilitation des paturages et des parcours en milieux mediterraneens. Reunion du Sous- Reseau Ressources Fourrageres.
- [3]. Mwangi, E., Swallow, B. (2005) Invasion of *Prosopis* and local livelihoods: Case study from the lake Baringo area of Kenya. *ICRAF Working Paper – no. 3*, Nairobi, World Agroforestry Centre.
- [4]. Stambouli, S; Bouzid, S; Dutuit, P; Harzallah-Skhiri, F. (2012) *In Vitro* Growth And Organogenesis Of *Prosopis Farcta* Plantlets (Fabaceae, Mimosoideae) In Culture Medium Supplemented With Various Concentrations Of Ca⁺⁺ And Na⁺. *Acta Biologica Hungarica* 63(1), Pp. 113–127. Doi: 10.1556/Abiol.63.2012.1.9
- [5]. Pasiecznik, N. M; Harris, P. J. C; Smith, S.J. (2004) Identifying Tropical *Prosopis* Species: A Field Guide. HDRA, Coventry, UK. ISBN 0 905343 34 4.
- [6]. Ranjbar-Heidari, A., Khaiatzadeh, J., Mahdavi-Shahri, N., & Tehranipoor, M. (2012). The effect of fruit pod powder and aquatic extract of *Prosopis farcta* on healing cutaneous wounds in diabetic rat. *Zahedan J Res Med Sci*, 14(5), 16-20.
- [7]. Miri, A., Khatami, M., Ebrahimi, O., & Sarani, M. (2020) Cytotoxic and antifungal studies of biosynthesized zinc oxide nanoparticles using extract of *Prosopis farcta* fruit. *Green Chemistry Letters and Reviews*, 13(1), 27-33.
- [8]. Davis P. H., Matthews, V. A., Kupicha, F. K., Parris, B. S. (1975) Flora osaf Turkey and the East Aegean Islands. Edinburgh, at the University Press.
- [9]. eFloras, (2010). eFloras, a collection of on-line floras from around the world. Harvard University.
- [10]. Qasem, J. R. (2007) Chemical control of *Prosopis farcta* (Banks and Sol.) Macbride in the Jordan Valley. *Crop Protection*, 26 (4): 572-575.
- [11]. Tran G. (2015) *Syrian mosquito (Prosopis farcta)*. Feedipedia, a programme by INRA, CIRAD, AFZ and FAO. <https://www.feedipedia.org/node/262> Last updated on October 12, 2015, 11:39.
- [12]. Zohary, M. (1972) Flora Palaestina. The Israel Academy of Sciences and Humanities, Jerusalem. Vol 2. Pp 29 – 30.
- [13]. ILDIS. (2009) ILDIS World Database of Legumes. International Legume Database & Information Service
- [14]. Roskov, Y; Zauocchi, J; Novoselva, M; Bisby, F (2020) ILDIS: World Database of Legumes (version 12, May 2014). In Species 2000 & ITLES Catalogue of Life, 2020-09-01 Beta (Roskove Y.; Ower G.; Orrell T.; Nicolson D.; Bailly N.; Kirk P.M.; Bourgoin T.; DeWalt R. E.; Decock W.; Nieuwerkerken E. van; Penev L.; eds) Digital resource at www.catalogueoflife.org/col. Species 2000: Naturalis, Leiden, the Netherlands, ISSN 2405-8858.
- [15]. Burkart A (1976) A monograph of the genus *Prosopis* (Leguminosae subfam. Mimosoideae). (Parts 1 & 2). Catalogue of the recognised species of *Prosopis*. *Journal of the Arnold Arboretum*. 57: 219-249, 450–525.
- [16]. Zaeifi M., Nazeri, V; Asadi. M; Pourseyedi, Sh. (2002) Chromosome Numbers of *Prosopis* Sect. *Prosopis* (Mimosaceae) From Iran. *The Iranian Journal Of Botany* 2002 , Volume 9 , Number 2; Pp 239 – 244.
- [17]. Trenchard, L. J., Harris, P. J., Smith, S. J., & Pasiecznik, N. M. (2008) A review of ploidy in the genus *Prosopis* (Leguminosae). *Botanical Journal of the Linnean Society*, 156(3), 425-438.
- [18]. Keith, H.G. (1965) *Apreihminiary check list to Libya flora Ministry of agriculture publica* , Libya, 2 vols .
- [19]. Saidi, MR., Farzaei MH., Miraghaee, S., Babaei, A., Mohammadi, B., Bahrami, MT and Bahrami, G. (2016) Antihyperlipidemic Effect of Syrian Mesquite (*Prosopis farcta*) Root in High Cholesterol Diet-Fed Rabbits. *J Evid Based Complementary Altern Med*. 21(4): NP62-NP66.
- [20]. Valverde, A., Fterich, A., Mahdhi, M., Ramirez-Bahena, MH., Caviedes, MA., Mars, M., Velázquez, E and Rodríguez-Llorente, ID. (2010) *Paenibacillus prosopidis* sp. nov., isolated from the nodules of *Prosopis farcta*. *Int J Syst Evol Microbiol*. 60, 2182-2186.