

# A New Record of *Cephalaria paphlagonica* Bobrov (Dipsacaceae) for the Iraqi Flora

Abdullah Sh. Sardar\*

Department of Biology, College of Education, University of Salahaddin, Erbil, Iraq

Received: July 13, 2014    Revised: August 20, 2014    Accepted: September 1, 2014

## Abstract

*Cephalaria paphlagonica* Bobrov is a new record to the Dipsacaceae family in Iraq, from Sakran mountain (north-east of Erbil) within Rowanduz district (MRO). Description, photographs, differential morphological characters and map of distribution are conducted.

**Keywords:** *Cephalaria paphlagonica*, Dipsacaceae, Rowanduz district, Iraq.

## 1. Introduction

The Dipsacaceae is one of the Iraqi flora families. This family involves 350 species throughout the world; these are distributed on 11 genera (Heukles, 2000). Iraq involves 24 species distributed on 4 genera (Al-Rawi, 1964). In Europe, the family is called Teasel (Heukles, 2000), and the genus *Dipsacus* L., from the same family, is also called Teasel (Knopf, 2000). Komarov (1957) mentioned 23 species of the genus *Cephalaria* in the Flora of U.S.S.R. In Turkey, Matthews (1972) recognized 29 species of the genus involving *C. paphlagonica*, while Gokturk and Sumbul (2014) mentioned 39 species. In Europe, Ferguson (1986) listed 14 species of the genus *Cephalaria*. In Saudi Arabia, Migahid and Hammouda (1978) mentioned 1 species of the genus. In Iran, Ghahreman and Attar (1999) mentioned 8 species of the genus. Rechinger (1964), in the Flora of low land Iraq, mentioned 2 species. While Al-Rawi (1964) and Ridda and Daood (1982) found 5 species in Iraq. Khalaf (1980) mentioned 2 species present in Sinjar mountain. Faris (1983) mentioned 3 species in Piramagrun mountain, while Fatah (2003) mentioned only 1 species of the genus in Haybat Sultan mountain.

The present study aims to revise the data concerning the presence of the plant *C. paphlagonica* in Iraq and to study the morphological characters and the geographical distribution of the species, as a contribution to the development of the Flora of Iraq.

## 2. Materials and Methods

For plant collecting, about 30 excursions were carried out to different regions of northern districts: MAM

(Amadiya District), MRO (Rowanduz District), MSU (Sulaimaniya District), FKI (Kirkuk District), FAR (Arbil District) and FNI (Nineveh District) during Spring and Summer seasons of year 2014. Some Iraqi herbarial specimens were used; these specimens were identified through the help of some keys, especially the Flora of Turkey. The specimens were made herbarially to become formal specimens, and putted in herbarium of the Education College (ESUH). The geographical distribution of the species was cleared with fixation of some ecological notes, and a map (plate 4) was putted.

## 3. Results

*Cephalaria paphlagonica* Bobrov in Bot. Zhurn. 17: 486 (1932), Fl. Turkey, Matthews, 4: 585 (1972).

Perennial, herbs (70-115 cm), rootstock brown, (5-7)x(1.5-2.0) cm, stem numerous, erect, glabrous, green, (30-40)x(0.4-0.6) cm. Leaves opposite-decussate, become smaller upwardly, basal leaves narrowly oblanceolate, narrowly oblanceolate-very narrowly elliptic, margin dentate, apex acute, base attenuate, glabrous, green, (45-75)x(10-15) mm, lower cauline leaves narrowly oblanceolate, very narrowly elliptic, margin dentate, entire or pinnatifid at base with 1-2 pairs of small segments, apex acuminate, acute, base attenuate, glabrous, green, (75-160)x(15-30) mm., upper cauline leaves very narrowly elliptic, linear, linear-very narrowly elliptic, cultrate-linear, margin entire or pinnatifid at base with 1-2 pairs of small segments, apex acuminate, base attenuate, truncate, glabrous, green, (12-130)x(1.5-20) mm. Inflorescence a cyme head, obconical, globular-semi globular, not radiant, (9-12)x(8-18) mm, peduncle multicostate, green, glabrous, (16-230)x(0.4-1.2) mm involucre bracts membranous, numerous rows (4-6), each

\* Corresponding author. e-mail: Aborosa1972@yahoo.com.

row with 4-5 bract, narrowly obovate, orbicular, deltate, margin ciliated, apex acute, apiculate, rounded, obtuse, base acute, rounded, obtuse, truncate, pubescent and pilose, yellow, (2.5-6.5)x(2.3-6.5) mm receptacular bracts membranous, oblanceolate, lanceolate, margin ciliated, apex acute, apiculate, obtuse, base acute, obtuse, truncate, yellow, pubescent and pilose, (6.0-9.0)x(1.8-2.7) mm flowers numerous, peripheral flowers sterile. Outer calyx or involucrel of tube and limb, the tube of central flowers cup-shaped, with 8 farrows and ridges, pilose, yellow, (1.7-2.0)x(1.3-1.5) mm, of peripheral flowers (0.6-0.8)x(0.5-0.7) mm, the limb of central flowers with 8 minute teeth, (0.8-1.2)x(1.6-1.9) mm, of peripheral flowers (0.4-0.6)x(0.9-1.2) mm. Inner calyx of tube and limb, the tube of central flowers tubular-ellipsoid, with 8 farrows and ridges, yellow, (1.6-2.0)x(0.9-1.2) mm, of peripheral flowers (0.4-0.6)x(0.4-0.7) mm, the limb of central flowers with 20-24 minute teeth, (1.4-1.8)x(1.7-2.2) mm, of peripheral flowers (0.7-1.0)x(1.0-1.3) mm. Corolla of tube and limb, the tube of central flowers pubescent and pilose, white-light yellow, (5.0-8.0)x(1.4-3.5) mm, of peripheral flowers (6.5-7.2)x(1.6-2.0) mm, the limb of central flowers with 4 equal lobes, oblanceolate, apex acute-obtuse, (3.0-4.2)x(5.0-6.4) mm, of peripheral flowers (4.0-4.5)x(4.2-4.6) mm. Stamens 4, exerted, epipetalous, inserted at the base of the corolla limb lobes and alternate with them, filaments filiform, yellow, (7.0-7.5) x (0.15-0.30) mm, anthers cultrate, narrowly oblong-cultrate, brown-yellow, versatile attachment with the filaments, (2.0-2.7)x(0.5-0.8) mm. Pistil single, ovary inferior, uni-locular, single pendulous ovule, narrowly lanceolate, lanceolate-narrowly ovoid, light yellow, (2.0-2.6) x (0.8-1.2) mm, (the ovary does not

grow in the sterile peripheral flowers), (0.4-0.9)x(0.2-0.4) mm, style filiform, terminal attachment with the ovary,

yellow, (5.0-7.0)x(0.30-0.45) mm, [in the peripheral flowers, the style lengths are short (0.9-1.1) mm, very short (0.4-0.6) mm, extremely short (0.15-0.30) mm], stigma oblong, reach to the middle of the corolla limb lobes, dark yellow, (0.25-0.35)x(0.15-0.20) mm. Fruiting heads globular, semi-globular, (9-13)x(9-12) mm, fruiting calyces similar the flowering ones but differ in their dimensions, outer fruiting calyx or involucrel tube (6.5-7.2)x(2.2-3.0) mm, the limb (1.5-2.0)x(0.1-0.2) mm, the inner fruiting calyx tube (5.5-6.7)x(1.2-2.6) mm, the limb (2.4-3.0)x(2.0-2.5) mm, fruit simple, dry, indehiscent, achenial, cypsela, very narrowly ellipsoid, very narrowly ellipsoid-narrowly ellipsoid, yellow-brown, (5.0-6.2)x(1.0-2.2) mm. Seed single, similar to the fruit, green-yellow, (4.0-5.2)x(0.8-1.8) mm ( plates 1-3).

**Type:** [Turkey A5] Amasia: in montis Ak-dagh regione alpine, alt. 16-1900 m.s.m., 13 viii 1889, Bornmuller 1074 (holo. LE!).

#### Material examined

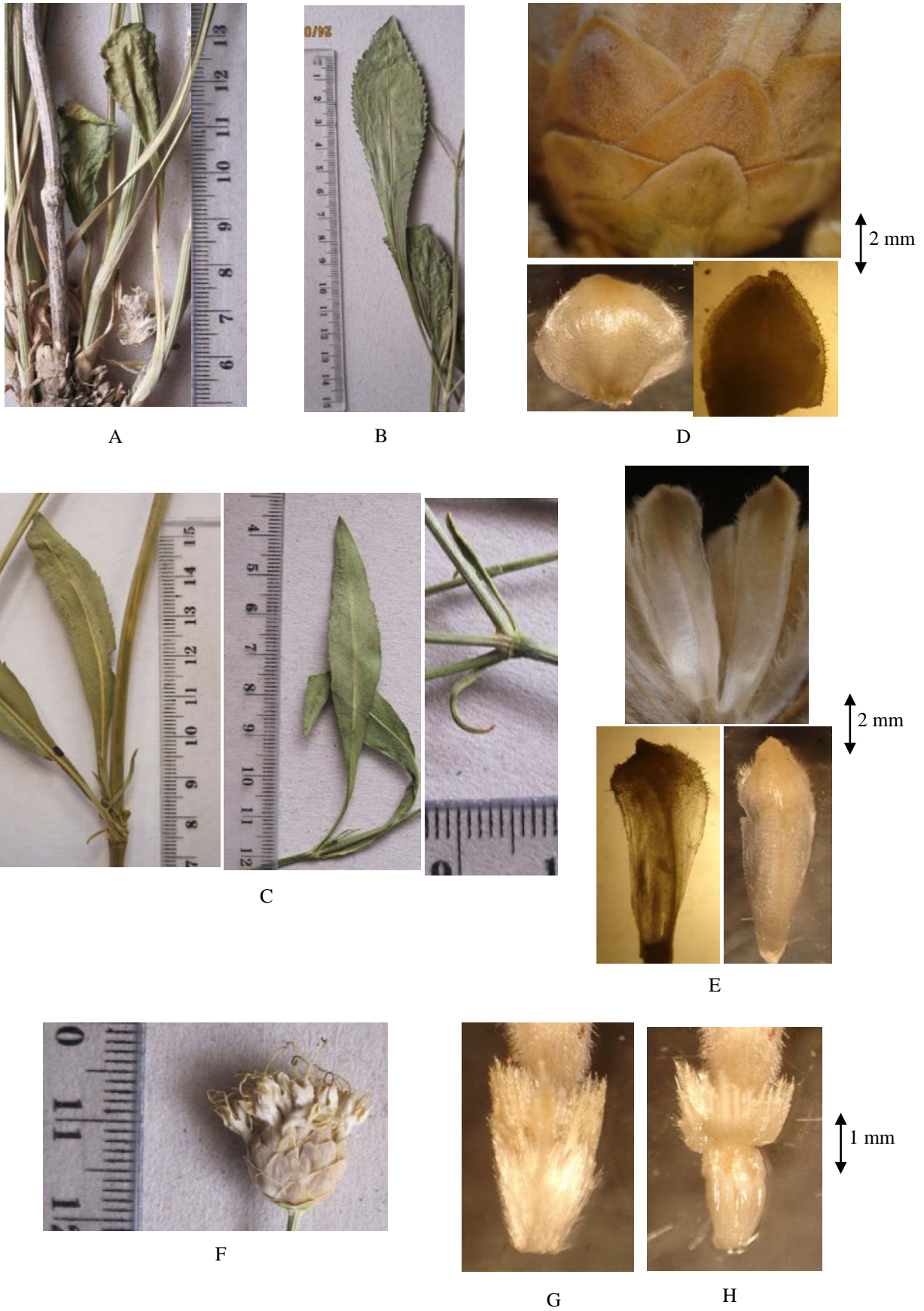
MRO: ESUH/ Sakran mountain (north-east of Erbil), 2400 m, 19.6.2014, A. Sardar & S. Al-Dabagh, 7141.

#### Environment & Geographical Distribution

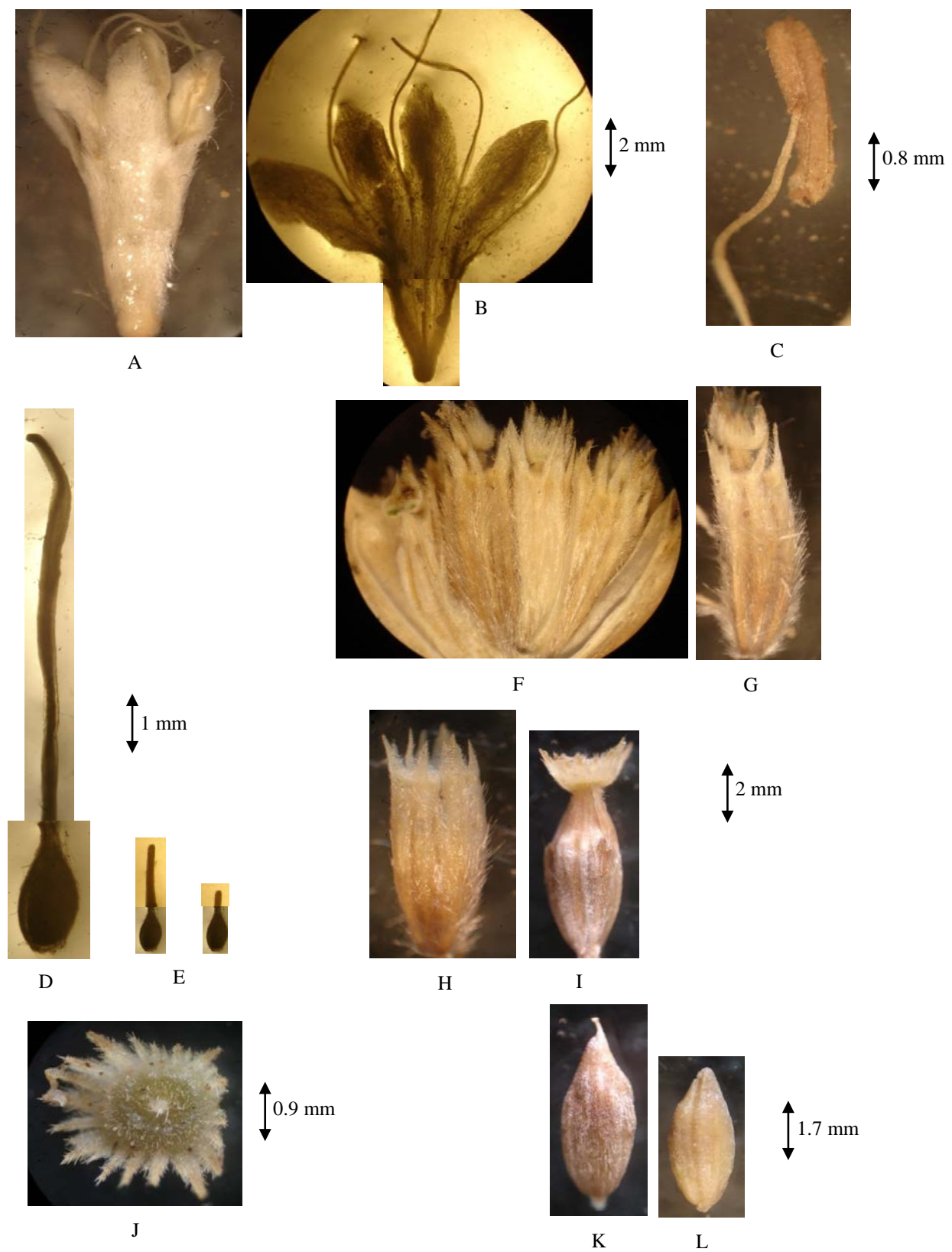
Found as population within the area, usually in wet exposed places, in clay and rocky clay soils; altitude: 2200-2400 m; flowering: June-July. Found in Sakran mountain within Rowanduz district (MRO) (plate 4).



Plate 1: Field photograph of *C. paphlagonica*



**Plate 2:** Vegetative and reproductive parts of *C. paphlagonica*: A. Basal leaves, B. Lower cauline leaves, C. Upper cauline leaves, D. Involucral bracts, E. Receptacular bracts, F. Flowering head, G. Outer calyx, H. Inner calyx



**Plate 3:** Reproductive parts of *C. paphlagonica*: A. Corolla, B. Opened corolla, C. Stamen, D. Fertile pistil, E. Sterile pistils, F. Section of fruiting head, G. Outer with inner fructing calyx, H. Outer calyx, I. Inner calyx, J. Inner fructing calyx limb: upper view, K. Fruit, L. Seed

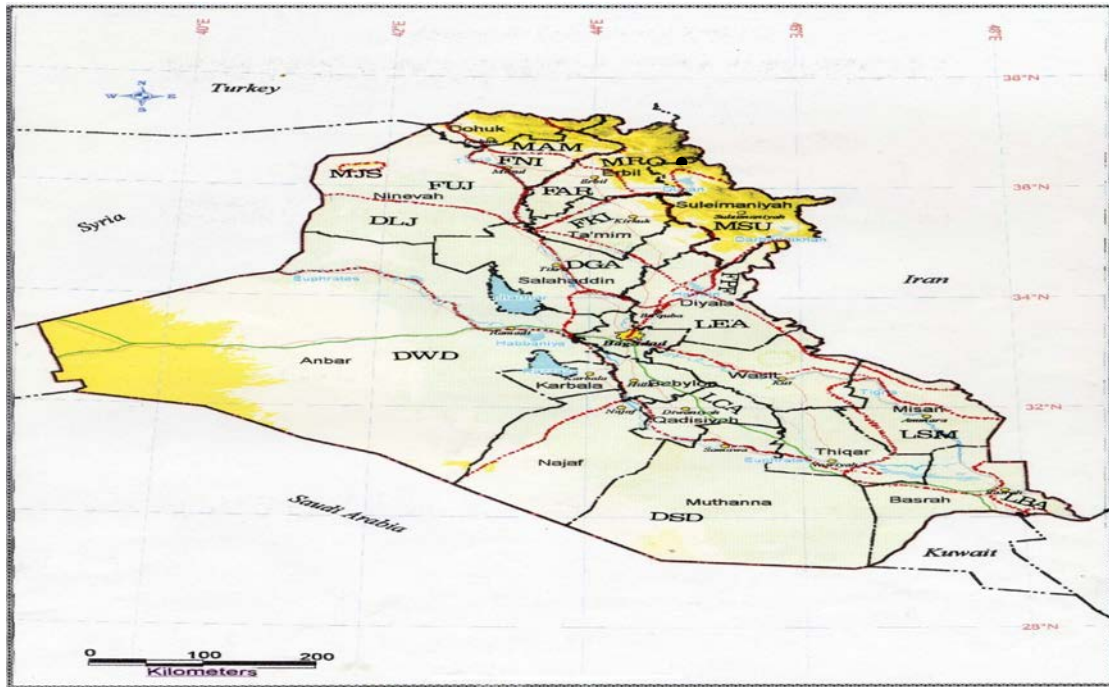


Plate 4: A map of Iraq shows the location of: ● *Cephalaria paphlagonica*

#### 4. Discussion

The present study deals with a new record of *Cephalaria paphlagonica* from the Dipsacaceae family. The study includes specific aspects, such as the morphological characters and the environment with the distribution in the studied area. Within the literature related to the genus *Cephalaria*, including the specimens of National Herbarium of Iraq and University Herbarium (in Baghdad University), the researcher did not find any species belonging to *C. paphlagonica*. Therefore, this contribution can be regarded a new record in Iraq from Sakran mountain.

*C. paphlagonica* has some characteristics different from the nearest species which is *C. microcephala* that found in Iraq, and these characteristics include the glabrous stem and leaves, entire or pinnatifid upper cauline leaves, not radiant flowering heads, narrowly obovate, orbicular, deltate involucre bracts with their yellow colors, 8 minute teeth of the involucre.

It is worth mentioning that the flowers are hermaphrodite, entomophilous, and the pistil is single and 2-syncarpous (Watson and Dallwitz, 1992)

#### References

Al-Rawi A. 1964. Wild plants of Iraq with their distribution. Ministry of Agriculture & Irrigation, State board for agricultural & water resources research, National Herbarium of Iraq, Baghdad: 102.

Faris Y S. 1983. The Vascular Plants of Pira Magrum mountain. M. Sc. Thesis, Salahaddin University, Erbil, Iraq.

Fatah H U. 2003. The Vascular Plants of Haibat Sultan mountain and the Adjacent Areas. M. Sc. Thesis, University of Sulaimani, Sulaimaniya, Iraq.

Ferguson.I.K. 1986. In: **Flora Europaea**.Vol.4. Cambridge Univ. Press: 57-58.

Ghareman A. and Attar F. 1999. Biodiversity of Plant Species in Iran. Central Herbarium, Tehran Univ., Tehran, Iran: 83

Gokturk R.S and Sumbul H. 2014. A taxonomic revision of the genus *Cephalaria* (Caprifoliaceae) in Turkey. *Turkish J Botany*, **38**: 927-968.

Heukles P. 2000. **Wild Flowers of Britain and Europe**, Harper Collins Publishers, 77-85 Fulham Palace Road-London W6 8JB: 607.

Khalaf M K. 1980. The Vascular Plants of Jabal Sinjar. M. Sc. Thesis, Baghdad University, Baghdad, Iraq.

Knopf A A. 2000. **Field Guide to Wild Flowers, Eastern Region (North America)**. National Audubon Society, Alfred A. Knopf Publisher, New York: 492.

Komarov V L. 1957. In: **Flora of the U.S.S.R.**, Vol.4. Izdatelstro Akademii Nauk SSSR, Moskva-Leningrad: 20-37.

Matthews V A. 1972. In: **Flora of Turkey**. Vol. 4. Edinburgh at the University press: 585 – 597.

Migahid A M and Hammouda M A. 1978. **Flora of Saudi Arabia**.Vol.1, Riyadh Univ. publ.: 534.

Rechinger, K. H. 1964. Flora of low land Iraq. Weinheim verlag von. *J. Cramer, wein*: 578-579.

Ridda T J and Daood, W. H. 1982. Geographical distribution of wild vascular plants of Iraq. National Herbarium of Iraq, Un publ.: 68.

Watson L. and Dallwitz, M .J. 1992.The families of flowering plants. <http://biodiversity.uno.edu>.

