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NOMENCLATURAL NOTES ON JURINEA MEDA (CARDUEAE, ASTERACEAE)

Amin Zeraatkar*[1] & Alberto Herrero[2]

[1]*Research Division of Natural Resources, Chaharmahal and Bakhtiari Agricultural and Natural Resources Research and Education Center (AREEO), Shahrekord, Iran*
[2]*Real Jardín Botánico, CSIC, Plaza de Murillo 2, 28014 Madrid, Spain*
**Corresponding author: Amin Zeraatkar*, *a.zeraatkar@areeo.ac.ir*

Abstract
During our research on the genus *Jurinea* (Asteraceae) in Chaharmahal and Bakhtiari Province, specimens collected from the northwest and west of the province were compared with the related type specimens and the original protologues. This analysis revealed that the type specimen of *J. viciosoi* lacks capitula and, therefore, requires epitypification. Accordingly, an epitype is designated here, selected from our recent collections at the type locality. *Jurinea viciosoi* has been traditionally distinguished from *J. meda* primarily based on decurrent leaves and some minor morphological characters. However, extensive field observations and herbarium studies demonstrated that these characteristics are highly variable and frequently occur within populations of *J. meda*. As a result, we confirm that *J. viciosoi* should be treated as a synonym of *J. meda*. Additionally, based on the examination of numerous flowering and fruiting specimens, a comprehensive and updated description of *J. meda* is provided here.

Keywords: Asteraceae; epitype; flora of Chaharmahal and Bakhtiari; typification

یادداشت‌هایی بر نامگذاری ***Jurinea meda*** **(Cardueae, Asteraceae)**

امین زراعتکار: استادیار پژوهش، بخش منابع‌طبیعی، مرکز تحقیقات و آموزش کشاورزی و منابع‌طبیعی استان چهارمحال و بختیاری، سازمان تحقیقات، آموزش و ترویج کشاورزی، شهرکرد، ایران
آلبرتو اِررو: باغ گیاه‌شناسی سلطنتی مادرید، شورای عالی تحقیقات علمی (CSIC)، مادرید، اسپانیا

چکیده: در جریان مطالعه جنس *Jurinea* (تیره مینا) در استان چهارمحال و بختیاری، نمونه‌هایی از این جنس که از شمال‌غرب و غرب استان جمع‌آوری شده بودند، با نمونه‌های تیپ و شرح‌های اصلی مقایسه گردیدند. این بررسی نشان داد که نمونه تیپ *J. viciosoi* فاقد کپه بوده و به همین دلیل، تعیین اپی‌تیپ برای آن ضروری است. بر این اساس، یک اپی‌تیپ از میان نمونه‌های تازه جمع‌آوری‌شده از محل تیپ انتخاب شد. *J. viciosoi* عمدتاً براساس داشتن برگ‌های یراق‌ساز در امتداد ساقه و چندین صفت ریخت‌شناسی جزئی از *J. meda* تفکیک شده است. مشاهدات و مطالعات صحرایی گسترده و نمونه‌های هرباریومی نشان دادند که این صفات خیلی متغیر هستند و مکرراً در افراد جمعیت‌های *J. meda* وجود دارند در نتیجه ما تائید کردیم که *J. viciosoi* مترادفی از *J. meda*

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است. علاوه بر این، بعد از بررسی نمونه‌های زیاد در مراحل گلدهی و رسیدن میوه، یک شرح کامل از *J. meda* در اینجا ارائه می‌گردد.

INTRODUCTION

Plants belonging to the genus *Jurinea* Cass. (Cardueae, Asteraceae) are distributed naturally across Central Asia, Iran, the Caucasus, Turkey, the Mediterranean region, and the Balkan Peninsula and include approximately 30 species in Iran (Mirtadzadini & Naderi 2022; Mirtadzadini & al. 2023).

Jurinea meda Bornm. is one of the relatively common endemic species within the genus, found along the western to northwestern regions of Iran. This plant's habitat includes rock crevices in the Zagros Mountain range, growing in cold and relatively humid climates at highlands (2100-4100 m a.s.l.). Morphologically, the species is closely related to *J. prasinophylla* Rech.f. and *J. viciosoi* Pau, two narrow chasmophyte endemics from the west of Iran (Mozaffarian 2018).

During ongoing systematic studies on the flora of Chaharmahal and Bakhtiari province, we noticed some specimens of the genus *Jurinea* collected from the northwest and western regions of the province are similar to *J. meda* and *J. vicious*. To ensure accurate identification, it is essential to examine the type specimens and original descriptions of these species. During this review, it was concluded that the type of *J. viciosoi* exhibits demonstrably ambiguous characteristics and lacks capitula, making it unsuitable for the precise application of the name. Therefore, following Art. 9.9 of the ICN (Turland & al. 2018), we propose an epitype from the type locality for a more accurate application of the name. Then, by examining and reviewing specimens from the type locality of *J. viciosoi*, we became convinced that the species is a synonym of *J. meda*. After studying various specimens during fruiting and flowering, a complete description of *J. meda* was prepared.

MATERIALS AND METHODS

Type specimens of the names and other related specimens have been examined in the herbaria B, D, E, G, HUI, K, MA, TARI, W, and Z (acronyms according to Thiers 2025). Moreover, the protologues and relevant literature (Rechinger & Wagenitz 1979; Rechinger 1990; Mozaffarian 2018) were consulted for more accurate typification. The herbarium material of the epitype specimens was collected during fieldwork in June 2023 to study the habitats of *Dionysia* species in Chaharmahal and Bakhtiari province, and they are kept at D and TARI. Nomenclatural issues conform to the articles of the ICN (Turland & al. 2018). Terminology follows Harris & Harris (1994), and Stearn (1995).

RESULTS & DISCUSSION

Taxonomic treatment

Jurinea meda Bornm., Beih. Bot. Centralbl., Abt. 2. 28(2): 258 (1911).

Lectotype (designated by Wagenitz on the specimens (1958–1959) and Rechinger & Wagenitz 1979:204): Persia occid. [west Iran], Sultanabad, [Markazi province, Shazand] in monte Kuh-i-Sefid-chane [Kuh-e Sefidkhani, ca. 33.955611 N, 49.544444 E], 12. V1. 1904, Strauss s.n. (JE, isolecto-: G [G00302809]!, B [B100088432]!, LD, W [W1911-0003631]!). **Syntype:** Sultanabad, in monte Kuh-i-Sefid-chane, VI. 1902, Strauss s.n. (E00467342!).

Perennial herbs, hardened at base; few-branched, (3–) 12–40 cm high, whitish tomentose, villose-arachnoideus, glandulose with sessile and rarely subsessile glands; collar covered with remnants of petiole sheaths, woolly. Stem simple, leafy at the lower part, leafless at the upper part or with small leaves, with solitary head, dense whitish tomentose-villous and glandulose, 1-2 mm in diameter. Leaves herbaceous, greenish blue or grayish green, glandulose with peltate glands, adaxially dense-sparse tomentose to partly villous-arachnoideus, abaxially grayish green, dense-very dense tomentose, villous-arachnoideus, flat; basal leaves lanceolate-ovate, obovate-lanceolate, oblong-lanceolate, 2-5 (-8) cm long, 0.5-1.5 cm wide, entire, rarely sinuate to finely dentate, often mucronate, mucronulate, to obtuse, acute, or rounded; short petiolate or decurrent. Median and upper leaves of stem lanceolate-ovate, oblong-lanceolate, lanceolate-linear, lanceolate, the median the same size as basal leaves, the upper ones strongly reduced, sessile, entire. Capitulum solitary on peduncles; peduncles simple, sometimes 2–3-branched at the upper part, with branches tapering to a solitary head. Involucre semiglobose to broadly campanulate, 14-18 mm long, 20-35 mm wide; involucral bracts (phyllaries) 80-90, 4-5-rowed, grayish green, grayish green with purple stripes on veins and margin, or upper part purple-lower part grayish green, appressed at base, recurved, deflexed, erect or patent at apex, margin scabrous, acuminate; outer ones 6-8 mm long, 1-1.5 mm wide, lanceolate-ovate, recurved, deflexed, or patent at apex, abaxially villous-tomentose, arachnoideus, and glandulose with sessile and rarely subsessile glands, adaxially villous-tomentose above; median phyllaries lanceolate-ovate,

patent at apex or erect, 10–12 mm long, ca. 2 mm wide, abaxially villous-tomentose, arachnoideus, scabrous and glandulose (with peltate and rarely capitate glands) at the upper half, adaxially partly villous-tomentose above; inner phyllaries membrane, erect, 14–19 mm long, 1.5-2 mm wide, lanceolate, oblong-lanceolate, adaxially scabrous at the upper part or apex, abaxially glabrous or scabrous at the apex. Receptacle scaly; scales subulate, 1-2 mm long, smooth. Florets 40–50; corolla pink, magenta, and purple, 13-18 mm long, with sessile and rarely subsessile glands, more and less with a few trichomes at the lobe apex; tube 6-8 mm long, blade 7-10 mm long, lobes 4-5 mm long, ca. 0.6 mm wide, acute; stamens ca. 8 mm long, glabrous, anthers 6–7 mm long, tube ca. 2 mm long, apical appendages acute, ca. 0.2 mm long, basal appendages caudate, ca. 1.5 mm long; style 15-19 mm long, exserted. Mature achene narrowly obpyramidal, subcompressed to compressed, shiny, white–yellowish, whitish or whitish-purple, ribbed, ca. 4 mm long, ca. 1.2 mm wide, glabrous, epidermal cells more and less prickly at the apex, with short prickles; carpopodium asymmetric, complete ring, turned to one side; corona rhombicus or trullate, dentate; teeth triangular, 0.05-0.06 mm long; Stylopodium polygonal, crenate-praemorse, nearly solid, ca. 0.5 mm in diameter, ca. 0.2 mm long. Pappus scabrid, persistent, white, with free, patent to erect bristles, trichomes dense; the 3-5 inner bristles 12–18 mm long, and the peripherals 3-8 mm long.

= ***Jurinea viciosoi*** Pau, Trab. Mus. Nac. Ci. Nat., Ser. Bot. 14: 40 (1918). **syn. nov.**

Holotype: Persia, Kouh Sefid (alto Karun) 3000 m, VI. 1899, *Martínez de la Escalera s.n.* (MA [MA-01-00131775!]) (Fig. 1).

Epitype (designated here): Iran, Chaharmahal and Bakhtiari province, Kuhrang, Bazoft, Kuh Sefid, Talkheh Dan, 32.088722 N, 50.046250 E, 2900–3000 m a.s.l., 28 June 2024, *A. Zeraatkar 7574* (D!, isoepitype: TARI!) (Fig. 2).

Additional specimens examined: Kordestan province, between Bijar and Hamadan, Mt. Hamzeh Arab, 2200–2600 m, 1 July 1971, Lamond and Terme 4356 (E00469532!). Lorestan province, 38 km to Shulabad on the road from Aligoodarz, 2200 m, 24 May 1998, Assadi 79032 (TARI!). Ghali kuh (E of the pass on road Aligudarz-Shoulabad), 3100–3600 m, 1 July 1977, Runemark & Lazari 26471 (TARI!). Isfahan province, Khansar, Golestan kuh, 2300–2600 m, 23 June 1998, Mozaffarian & Maassoumi 77947. Fereydun shahr, Masir, kuh-e Venizan, 2500 m, 8 July 1996, Mozaffarian 77239 (TARI!). Khansar, south of Mt. Sil, 2600 m, Babakhanloo & Amin 3800 (IRAN!); the same locality, 2600 m, 15 July 2024, Zeraatkar 7577 (D!). Between Damaneh and Khansar, Balehsunkuh, 3110 m, 14 July 1966, Archibald 2724 (E00467344!). Tiran and Karvan County, Dotoo village, Dalankuh, 2400-2500 m, 15 July 2024, Zeraatkar 7576 (D!). Khuansar (Khansar), N 33 12. 156, E 50 19. 036, 2400 m, 23 May 2008, Mirtadzadini (HUI!, W20090013036!). Chehel Dokhtaran kuh, N 32 55, E 56 36, 2800 m, 2 June 1959, Wendelbo 1764 (B100426999!). Markazi, Shazand, Kuh-e Sefidkhani, 33.955611 N, 49.544444 E, 2650 m, 18 July 2024, Zeraatkar 7575 (D!). Chaharmahal and Bakhtiari province, road from Shahr-e kurd to Naghan, N of Sulghan, kuh-e Shahpur- Naz, 2100 m, 5 July 1986, Mozaffarian 57442 (TARI!). Borujen, Choghakhor, south Sibak, Tang Siah, Tang Nanaee, mount Kallār, 2800–3300 m, 19 June 2022, Zeraatkar 7096 (D!, TARI!). Kuhrang, Zardkuh, Laieh Sabz, 4140 m, 5 August 1966, Archibald 3004 (E00467343!). Darr-e Bazoft, Mavarz, Kuh- sefid Safid from Talkhedan valleys, 1450–2200 m, 27 June 1995, Mozaffarian 74581 (TARI!). Ardal to Darr-e Bazoft, Kuh-e Mili, 2700 m, 26 June 1995, Mozaffarian 74546 (TARI!). Khuzestan province, Dehdez, Kuh-e safid, 2300–2750 m, 19 June 1995, Mozaffarian 74536 (TARI!).

Notes: Pau described *J. viciosoi* based on a single specimen collected by Martínez de la Escalera from Kuh Sefid, the frontier between Khuzestan and Chaharmahal and Bakhtiari provinces (Pau & Vicioso 1918; Morales & al. 2011). During the treatment of *Flora Iranica*, Rechinger noted that the capitula of the specimen were lost (Rechinger & Wagenitz 1979; Rechinger 1990), so he based his description on the original account and only added further details about vegetative characteristics, such as leaf size and plant height. Subsequently, Mozaffarian (2018), while writing the *Flora of Iran* and based on his collections and those of others from the type locality and surrounding areas, further completed the description. However, he did not have access to mature fruits and also did not mention other important reproductive and vegetative characteristics of this plant. Furthermore, Mozaffarian (2018) proposed that *J. meda* and *J. viciosoi* represent the same species. However, due to a lack of access to the type specimens of both species, he has temporarily refrained from formally synonymizing them.

During the description of *Jurinea viciosoi*, no mention was made of related species. Pau (1918) overlooked the endemic Iranian species *J. meda* when he described *J. viciosoi*, probably due to limited access to Iranian material and literature.

In subsequent studies on this genus, this species has been distinguished from *J. meda* by having decurrent leaves on the stem. Additionally, when comparing the descriptions of these two species in the *Flora Iranica*

Fig. 1. Holotype of *Jurinea viciosoi* (MA-01-00131775). Courtesy of Herbarium MA, reproduced with permission.

Fig. 2. Epitype of *Jurinea viciosoi* (D*7574*). Courtesy of Herbarium D, reproduced with permission.

(Rechinger & Wagenitz 1979) and *Flora of Iran* (Mozaffarian 2018), *J. viciosoi* is separated from *J. meda* by minor characteristics: slightly greater height (up to 40 cm versus 3–35 cm), having entire leaves (versus entire and rarely sinuate-dentate), shorter leaves (4–5 cm long and 1–1.5 cm wide versus 2–8 cm long and 0.5–1 cm wide), oblong-lanceolate or somewhat lanceolate-ovate, mucronate leaves (versus oblong-lanceolate or obovate-lanceolate, acute or somewhat obtuse), simple peduncles (versus simple, rarely 2-branched), semiglobose involucres (versus semiglobose to broadly campanulate) with a height of 18 mm (versus 15–18 mm), a purple to red corolla (versus red), and longer inner pappus bristles (up to 16 mm versus 12–18 mm).

During the fieldwork in Isfahan and Markazi provinces (Mts. Sil, Dalankuh, and Sefidkhani), we collected specimens that fit with the description of *Jurinea viciosoi,* and we carefully observed morphological variation, especially in height, leaves, and involucre size, leaves outline, and corolla color. Most distinguishing characteristics of *J. viciosoi* from *J. meda* can be observed in individuals of different *J. meda* populations in the provinces. Additionally, in examining of *J. viciosoi* specimens from the type locality in Kuh Sefid, some individuals exhibited slightly sinuate-dentate leaves, stems with 2–3 branches at the upper part (Fig. 2), and leaves up to 7 cm in length. Moreover, significant variation was observed in the specimens from this mountain in terms of involucre size (ranging from 14 to 18 mm in height), corolla color (pink, purple, and magenta), and the size and number of inner pappus bristles (14–17 mm in length, 3–5 in number). Then we found that the description of *J. viciosoi* falls into the variation of *J. meda* and they are conspecific.

The holotype of *J. viciosoi* lacks capitule, which is the morphological characteristic that distinguishes the species, as currently understood, from other species of the genus. Therefore, it does not permit a precise application of the name, and an epitype is needed (Turland & al. 2018: art. 9.9). An epitype from our new collection from the type locality is designated here.

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REFERENCES

Harris, J.G., & Harris, M.W. 1994: Plant identification terminology: An illustrated glossary. Spring Lake, Utah, USA: Spring Lake Publishing.

Mirtadzadini, M., & Naderi, R. 2022: *Jurinea boreoiranica* (Asteraceae, Cardueae), a new chasmophyte species from eastern Alborz, Iran. - Nord. J. Bot. 2022(7): e03521. https://doi.org/10.1111/njb.03521

Mirtadzadini, M., Bordbar, F., & Bidarlord, M. 2023: *Jurinea stenocarpa* (Asteraceae, Cardueae), a new species from the north-west of Iran. - Nord. J. Bot. e03987. https://doi.org/10.1111/njb.03987

Morales, R. & al. 2011: Los Martínez de la Escalera en las colecciones del Real Jardín Botánico de Madrid. In C. Martín & I. Izquierdo (Eds.), Al encuentro del naturalista Manuel Martínez de la Escalera (1867–1949): 481-523. Consejo Superior de Investigaciones Científicas, Madrid.

Mozaffarian, V. 2018: Asteraceae, Cynareae, *Jurinea*. – In: Assadi, M., Maassoumi A.A. & Safavi S.R. (eds.), Flora of Iran, no. 144: 73-123. Research Institute of Forests and Rangelands. Tehran.

Pau, C. & Vicioso, C. 1918: Plantas de Persia y Mesopotamia recogidas por D. Fernando Martínez de la Escalera. *Trabajos del Museo Nacional de Ciencias Naturales* Serie Botánica, 14: 1-48.

Rechinger, K.H. & Wagenitz, G. 1979: *Jurinea* Cass. – In: Rechinger, K. H. (ed.), Flora Iranica, Vol. 139: 180-209. Akademische Druck- und Verlagsanstalt, Graz.

Rechinger, K.H. 1990: Revisión of Pau's types of plants collected by Martínez de la Escalera in Irán (1899). Annales del Jardín Botánico de Madrid 47 (2): 361-375.

Stearn, W.T. 1995: Botanical Latin: History, grammar, syntax, terminology, and vocabulary (4th ed.). Portland, OR: Timber Press.

Thiers, B. 2025: Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. Available from: http://sweetgum.nybg.org/ih/ (accessed January 2025).

Turland, N.J., Wiersema, J.H., Barrie, F.R., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Kusber, W.-H., Li, D.-Z., Marhold, K., May, T.W., McNeill, J., Monro, A.M., Prado, J., Price, M.J. & Smith, G.F. (eds.) 2018: International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. Regnum Vegetabile 159. Glashütten: Koeltz Botanical Books. https://doi.org/10.12705/Code.2018