

Typification notes on Iranian *Apiaceae* (tribe *Echinophoreae*)

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In studying different taxonomic aspects of the tribe *Echinophoreae*, the typification status of all species was reviewed. In the present study, authors of the paper designated a syntype for *Pycnocycla aucheriana* var. *aucheriana* name and rejected type conditions for a few specimens of *Anisosciadium orientale* and *P. aucheriana* var. *aucheriana*. In addition, some corrections in location and specimen information have been made on a number of type specimens of *A. orientale*, *P. cespitosa*, and *P. spinosa* var. *aitchisonii* at herbaria C, K, and P.

Keywords: *Anisosciadium*, isotype, *Pycnocycla*, syntype, *Umbelliferae**** یادداشت‌هایی بر تیپ‌گذاری چتریان ایران (تبار *Echinophoreae*)**

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خلاصه

طی مطالعه جنبه‌های مختلف تاکسونومیک تبار *Echinophoreae*، وضعیت تیپ‌گذاری تمامی آرایه‌های تبار مذکور مورد بررسی قرار گرفت. در بررسی حاضر، یک سین‌تایپ برای *Pycnocycla aucheriana* var. *aucheriana* معرفی و وضعیت تیپ تعدادی از نمونه‌های هرباریومی مربوط به آرایه‌های *Anisosciadium orientale* و *P. aucheriana* var. *aucheriana* رد شد. همچنین، اصلاحاتی بر اطلاعات مربوط به محل رویش و نمونه‌های هرباریومی نگهداری شده از آرایه‌های *A. orientale*، *P. cespitosa* و *P. spinosa* var. *aitchisonii* در هرباریوم‌های C، K و P انجام گردید.

واژه‌های کلیدی: ایزوتایپ، سین‌تایپ، کرفسیان، *Pycnocycla*، *Anisosciadium*

Introduction

Tribe *Echinophoreae* Benth. including six morphologically distinct genera viz. *Anisosciadium* DC., *Dicyclophora* Boiss., *Echinophora* L., *Ergocarpon* C.C. Towns., *Pycnocycla* Lindl., and *Thecocarpus* Boiss., and 28 species which are mostly distributed in the Middle East and Southwest Asia, with a few species occurring in Europe and Africa (Hedge & Lamond 1987, Pimenov & Leonov 1993, Mozaffarian 2007).

The genus *Anisosciadium* which occurs in Palestine, Jordan, Syria, Iraq, Eastern Saudi Arabia, Iran, and Afghanistan includes three species, namely, *A. isosciadium* Bornm., *A. lanatum* Boiss., and *A. orientale* DC. (Zohary 1972, Hedge & Lamond 1973, 1987, Mandaville 2013, Townsend 2013).

The genus *Pycnocycla* has been circumscribed by 15 species and represents the largest genus of the tribe *Echinophoreae*. This genus is distributed from dry regions of Northern Africa to Iran, Afghanistan, and Western Pakistan (Wolff 1922, Hedge & Lamond 1973, 1987, Mozaffarian 2007, Townsend 2013).

During our taxonomic research on the tribe *Echinophoreae*, we reviewed all species names and discovered some incorrect information regarding the typifications such as wrong locations, inaccurate type labels and missing type designations. Therefore, we studied all original protologues and herbarium materials of the following names: *Anisosciadium orientale*, *Pycnocycla aucheriana* Boiss. var. *aucheriana*, *P. cespitosa* Boiss. & Hausskn., and *P. spinosa* Decne. var. *aitchisonii* (Rech.f. & Riedl) Hedge & Lamond. For nomenclatural stability and to avoid nomenclatural disruption, we made some corrections i.e., designated a syntype and rejected two type conditions for the mentioned species' names.

Materials and Methods

To perform typification of the mentioned species names, we studied the following: all related materials and digitalized specimens of the major herbaria as well as available publications including all

protologues and most of the relevant Floras of the region (Candolle 1830, Boissier 1844, 1872, Davis 1972, Hedge & Lamond 1973, 1987, Mozaffarian 2007, Townsend 2013). Some corrections in location and specimen information (along with the photography) have been made on a number of type specimens of *A. orientale*, *P. cespitosa*, and *P. spinosa* var. *aitchisonii* with the the permission of the concerning herbaria curators (explained below).

Results

- Taxonomic treatment

1. *Anisosciadium orientale* DC., Prodr. 4: 234 (1830)

Syn.: *Dicyclophora morphologica* Velen., Mem. Soc. Sci. Boheme 1921–22, No. 6, 5 (1923); *Chamaesciadium morphologicum* (Velen.) M. Hiroe, Umbelliferae World 996 (1979); *Echinophora orientale* (DC.) M. Hiroe, Umbelliferae World 649 (1979)

Type: IRAQ: Between Baghdad and Aleppo, Olivier & Bruguère s.n. (P02284885!, P02284886!)

Distribution: Afghanistan, Iran, Iraq, and Syria

In exploring type specimens at herbarium P, we found four specimens with SYNTYPE (possible) labels that did not include the name(s) of the scientists who assigned those typifications (P barcodes P02516703, P02516706, P02516707, and P02516710). The specimen under the barcode P02516706 was collected from a location between Tehran and Isfahan, Iran (Fig. 1). Since the only locality stated in the protologue is “Between Bagdad and Alep, Iraq” (De Candolle 1830), we rejected the type condition for this specimen. The mentioned locations of the other three specimens were “Entre Bagdad à Mossul” and “Mésopotamie” (Figs 2–4), both in the area of “Baghdad to Alep” in Iraq, but since they were not cited in the protologue, we considered them as “Doubtful Syntypes”. — <http://coldb.mnhn.fr/catalognumber/mnhn/p/p02516706>, <http://coldb.mnhn.fr/catalognumber/mnhn/p/p02516703>, <http://coldb.mnhn.fr/catalognumber/mnhn/p/p02516707>, and <http://coldb.mnhn.fr/catalognumber/mnhn/p/p02516710>.



Fig. 1. *Anisosciadium orientale* (Olivier & Bruguère s.n., P02516706).



Fig. 2. *Anisosciadium orientale* (Olivier & Bruguère s.n., P02516703).



Fig. 3. *Anisosciadium orientale* (Olivier & Bruguère s.n., P02516707).



Fig. 4. *Anisosciadium orientale* (Olivier & Bruguère s.n., P02516710).

2. *Pycnocycla aucheriana* var. *aucheriana* Boiss., Ann. Sci. Nat., Bot. sér. 3, 2: 88 (1844)

Syn.: *Chamaesciadium aucherianum* (Decaisn. ex Boiss.) M. Hiroe, Umbelliferae World 994 (1979)

Type: IRAN: Southern deserts Aucher-Eloy 4559 (Lectotype: G00757533!; Syntypes: G00370295!, K000697352! (designated here), P00834396!, W0053620!)

Distribution: Iran, Oman, and Pakistan

We found some specimens in different herbaria with the same location, collector and collection numbers as in the protologue; Deserts in South of Iran, Aucher-Eloy 4559. Among them, Pimenov selected one specimen from Iran at herbarium G as the lectotype for this variety name (G00370295). Based on the same collection information, we designated another specimen at herbarium K as a syntype for this name (K000697352). This specimen is currently stored under the name

of *P. tomentosa* on Kew herbarium catalogue which needs to be corrected (Fig. 5). — <http://specimens.kew.org/herbarium/K000697352>.

In addition, we rejected the proposed type statuses of two specimens from “Oman, Mt. Chebek, Muscat” by

Aucher-Eloy under the number 4559 (P00834394! and P00834395!) due to lectotypification from Iran by Pimenov (Figs 6–7). — <http://coldb.mnhn.fr/catalognumber/mnhn/p/p00834394>, and <http://coldb.mnhn.fr/catalognumber/mnhn/p/p00834395>.

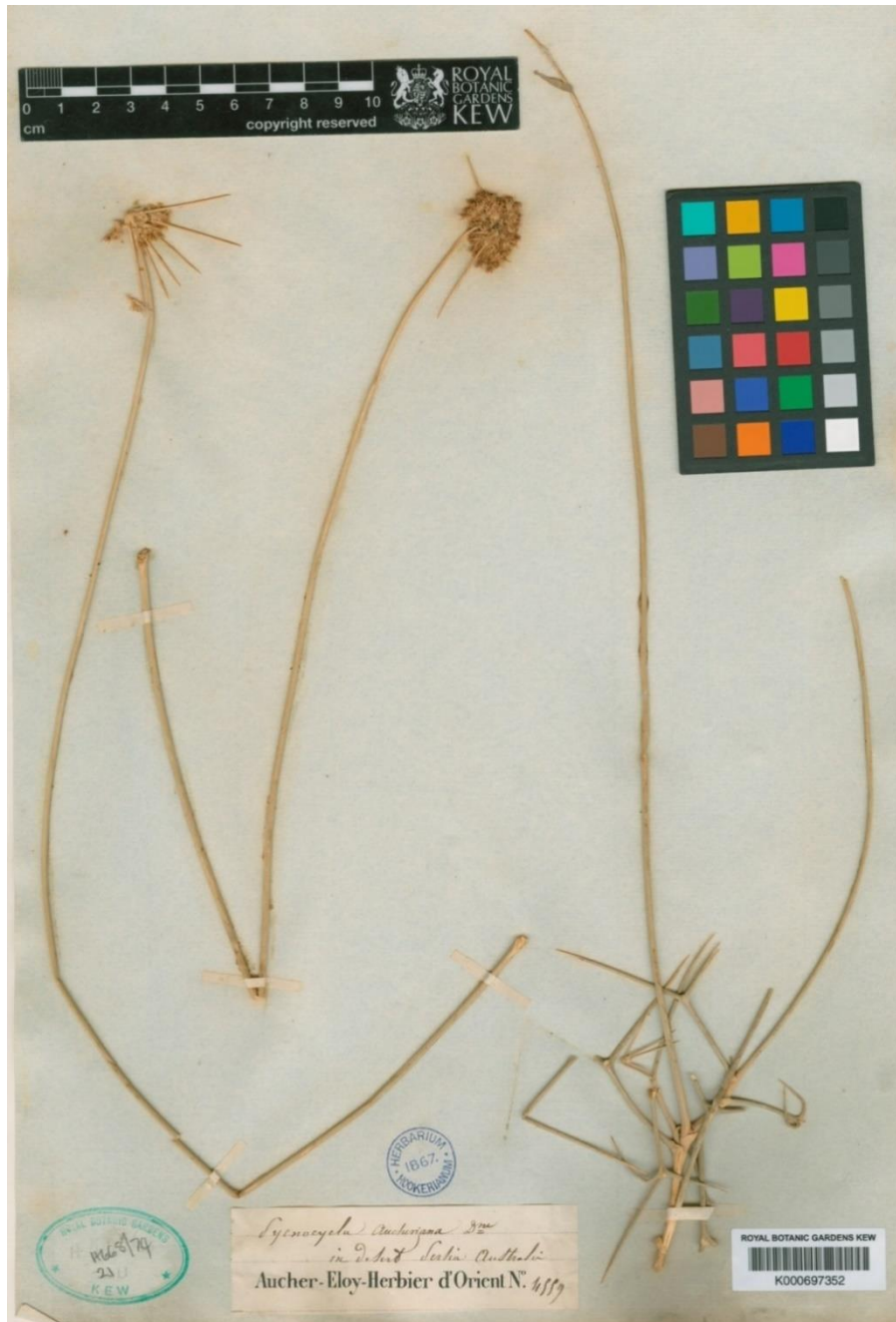


Fig. 5. Syntype of *Pycnocycla aucheriana* var. *aucheriana* (Aucher-Eloy 4559, K000697352).



Fig. 6. *Pyncocykla aucheriana* var. *aucheriana* (Aucher-Eloy 4559, P00834394).



Fig. 7. *Pyncocyclus aucheriana* var. *aucheriana* (Aucher-Eloy 4559, P00834395).

3. *Pycnocycla spinosa* Decaisne var. *aitchisonii* (Rech.f. & Riedl) Hedge & Lamond, Notes Roy. Bot. Gard. Edinburgh 37 (1): 63 (1978)

Syn.: *Pycnocycla aitchisonii* Rech.f. & Riedl, Biol. Skr. xiii, No. 4 (Symb. Afghan. V.): 117 (1963)

Type: IRAN: Khorasan prov.: Malkat, between Torbat-e Heydariyeh and Khaf, 1885, Aitchison 817 (Holotype: C10008536!; Isotypes: P00834406!, P00834407!, K, W)

Distribution: Afghanistan and Iran

In Flora Iranica (Hedge & Lamond 1987), type specimen of *P. spinosa* var. *aitchisonii* is recorded from “IRAN: Khorasan prov., Malkat between Torbat-e Heydariyeh and Khaf (Aitchison 817)”. However, we found three isotypes from herbaria C and P that labelled with same province (Khorasan) and collection number (817) but were reported in their digital catalogue from Afghanistan as opposed to Iran: C10008536, P00834406 and P00834407. The last one carries a label including “Aitchison. Plantes de l’Afghanistan”.

Similar confusing information is also found in other collections of Aitchison in his journey to Afghanistan during 1884–85. We believe that, lack of access to an accurate geographic map might have contributed to the above. Ghahremaninejad *et al.* (2022) indicated and corrected the location information of *Astragalus durandianus* from same gathering of Aitchison in their comprehensive taxonomic study on this species. To avoid misguiding researchers who may not have enough insight into the region’s geography, here author of the paper corrected their location information as IRAN: Khorasan prov., Malkat between Torbat-e Heydariyeh, and Khaf, Aitchison 817 (Figs 8–10). — <http://daim.snm.ku.dk/digitized-type-collection-details?catno=C10008536>, <http://coldb.mnhn.fr/catalognumber/mnhn/p/p00834406>, and <http://coldb.mnhn.fr/catalognumber/mnhn/p/p00834407>.

In addition, specimen with barcode number P00834407 is a type specimen for this variety name and should be labeled as isotype.

Since we observed similar mistakes in Aitchison’s other collection, therefore, we suggest a comprehensive study on all specimens gathered in his journey to Afghanistan to correct location of specimens from Iran.

Note: Among several type specimens of the *Pycnocycla cespitosa*, two isotypes at herbarium P are recorded to be from Syria on their website: P00752719 and P00752720. However, the location provided on the label is Tang-e Takab near Behbahan, which is an area in the province of Khuzestan (Iran). In addition, this species has been recorded only from Iran, Oman, and UAE where there are no records of its occurrence in Syria in the literature (Hedge & Lamond 1987, Mozaffarian 2007). Hence, we suggested the corrected locality for these two isotypes as “IRAN: Khuzestan prov., Tang-e Takab near Behbahan”.

Discussion

With six genera and 28 species, *Echinophoreae* is a small morphologically distinct tribe of the family *Apiaceae*. We conducted a comprehensive study on typification and type designations of all species of *Echinophoreae*. While browsing all original protologues and the herbarium specimens of tribe *Echinophoreae*, we discovered some inaccurate information regarding type materials including wrong locations, erroneous type labels and missing type designation. Therefore, several corrections were applied to some specimens of *A. orientale*, *P. aucheriana* var. *aucheriana*, *P. cespitosa*, and *P. spinosa* var. *aitchisonii* at herbaria C, K, and P. However, more consideration is required for the rest of the species of this tribe to collect more precise data concerning their typifications.

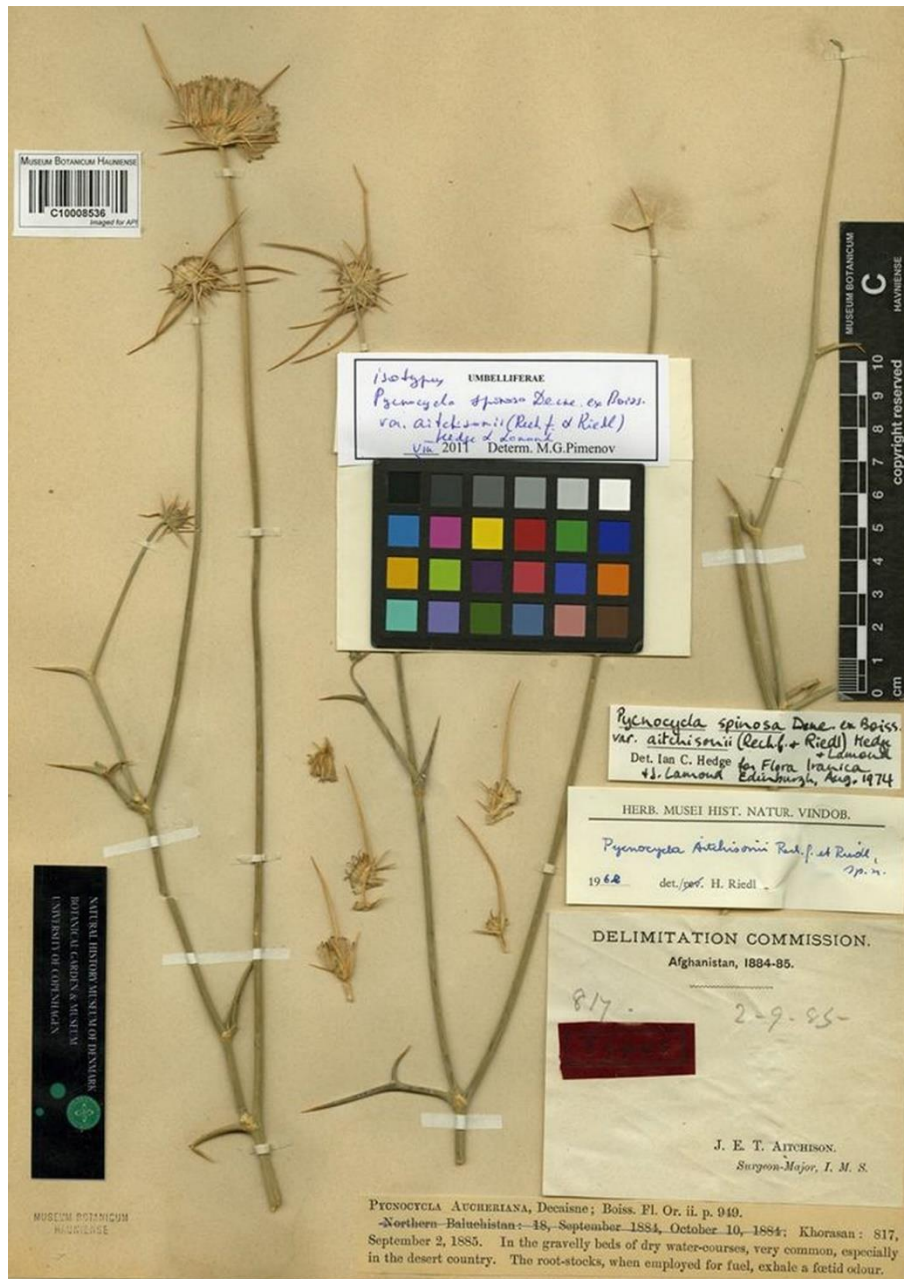


Fig. 8. Isotype of *Pycnocycla spinosa* var. *aitchisonii* (Aitchison 817, C10008536).



Fig. 9. Isotype of *Pycnocycla spinosa* var. *aitchisonii* (Aitchison 817, P00834406).



Fig. 10. Isotype of *Pyncocyclus spinosa* var. *aitchisonii* (Aitchison 817, P00834407).

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