

Short communication

**First report of *Tydeus caudatus* (Acari: Tydeidae) from Iran**

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چکیده

در این یادداشت، کنه‌ی *Tydeus caudatus* (Duge`s) از باغات میوه کرمانشاه برای اولین بار از ایران گزارش می‌شود. همچنین، تاریخچه‌ای مختصر از تاکسونومی همراه با خصوصیات ریخت‌شناسی این کنه ارائه شده است.

Tydeid mites are fast moving small soft-bodied mites with colour ranged from white, yellow, green and orange to black. Dorsally, the idiosoma can be striated or reticulated. Ventrally, it is usually striated. They are known from all major continents and found in moss, litter, soil, fungi, bird's nests, on plants and stored products (Khanjani & Ueckermann, 2003).

The history of the type genus *Tydeus* Koch is complex and even the identification of the type species of its family remains unclear (Andre', 2005). For the first time, Baker (1965, 1970) gave a description of the genus *Tydeus* including the leg chaetotaxy. His works followed by Kuznetsov & Livshitz (1973) and Castagnoli (1984). Referring to Baker (1965), Kaz'mierski (1989, p. 290) gave the femoral pattern (3-2-1-1) as typical for *Tydeus* and the type species, *Tydeus kochi* Oudemans. Finally the second oldest species *Tydeus caudatus* (Duge`s), as re-described by Thor (1933), redefined by Andre' (2005). This is an attempt to precise introducing of *T. caudatus* to Iranian fauna.

The specimens were collected from orchards foliage and branches during 2006 and 2007. Four or five trees were mostly shaken for a period of about 5 minutes. Mites were transferred from the board to 75% ethyl alcohol by using a very fine paintbrush. Another method was collecting the leaves and branches in zip-kip nylons and transferring them to laboratory. Mites were detected under stereomicroscope within laboratory using wet fine brush and kept in ethyl alcohol. After clarifying in lactophenol medium, permanent mounts were made using Hoyer's solution (Krantz, 1978). The identification of species was carried out using relevant references (descriptions and keys). The identified specimens are deposited in the Acarology museum, Department of Entomology, Agricultural Faculty, Tarbiat Modares University, Tehran, Iran.

While the Tydeidae status is being reconsidered and they are about to be seen as beneficial organisms, it is important to have precise species description and identification.

High density of striae and difficult shape of setae are limitations for biologists to determine the species correctly.

These distinguishing characters separates *T. caudatus* from other tydeid mites: tarsus I has empodium and claws; the striae are longitudinal on the propodosoma and transverse on the hysterosoma; the D and L setae of the hysterosoma lie in transverse rows. The number of genital setae varies within the genus, as does the ventral striation pattern. *Tydeus caudatus* is distinctive in that there are 3 pairs of spatulate setae on the posterior dorsal setae of the body (the D<sub>4</sub>, D<sub>5</sub> and L<sub>4</sub> setae). The dorsal striae are typical for the genus; the ventral striae are longitudinal between setae V<sub>2</sub> and V<sub>3</sub>. There are 6 pairs of genital setae. Empodial claws are not present (Jeppson *et al.*, 1975). The chaetotaxy of legs is shown in table 1.

**Table 1.** Number of setae on leg segments of *T. caudatus*.

Leg	Tarsus	Tibia	Genu	Femur	Trochanter
I	8	4	3	3	1
II	6	2	2	2	0
III	5	2	1	1	1
IV	5	2	1	1	0

The shape of setae, especially at the posterior margin of the body, is very confusing. Baker (1970) and Castagnoli (1984) reported that terminal setae in *T. caudatus* are spatulate. The type of *T. spathulatus* with its five pairs of lanceolate setae defers from other tydeid species with three pairs of clavate or spatulate setae, like *T. caudatus*.

The genus *Tydeus* includes 40 extant species; 28 of these have been recorded on plants. *Tydeus californicus* Banks, *T. electus* (Kuznetzov), *T. gloveri* (Ashm), *T. inclutus* Livshitz, *T. kochi* Oudemans, *T. stari* Baker *T. kabutarahangensis* Khanjani & Ueckermann, *T. caryae* Khanjani & Ueckermann are the other reported *Tydeus* species from Iran and the last two ones are new world species (Khanjani & Ueckermann, 2003; Kamali *et al.*, 2001). Here, we added *T. caudatus* to the above list. The specimens were collected from sour cherry, grape, plum, walnut and greengage leaves on 4 Aug, 2007 in Sarab Ghanbar region, south part of Kermanshah city (West of Iran).

According to important role of *T. caudatus* in permanent agricultural ecosystems, more studies can help to clarify its role and its relation with phytophagous and predaceous mites in Iran's orchards. This species can act as an alternative food, predator and scavenger especially in orchards with no chemical control measures. Soft body, thin skin and moving fast, makes

tydeids good target organisms to the pesticides. Therefore, the conservation methods or selective pesticides can lead to have more biodiversity and fewer pests.

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## References

- Andre', H. M.** (2005) In search of the true *Tydeus* (Acari: Tydeidae). *Journal of Natural History* 39(13), 975-1001.
- Baker, E. W.** (1965) A review of the genera of the family Tydeidae (Acarina). pp. 96-133 in Naegele, J. A. (Ed.) *Advances in Acarology*. Vol. 2, 174 pp. Cornell University Press.
- Baker, E. W.** (1970) The genus *Tydeus*: subgenera and species groups with descriptions of new species (Acarina: Tydeidae). *Annals of the Entomological Society of America* 63(1), 163-177.
- Castagnoli, M.** (1984) Contributo alla conoscenza dei Tideidi (Acarina: Tydeidae) delle piante coltivate in Italia. *Redia* 67, 307-322. [In Italian with English summary].
- Jeppson, L. R., Keifer, H. H. & Baker, E. W.** (1975) *Mites injurious to economic plants*. 614 pp. University of California Press, Berkely.
- Kamali, K., Ostovan, H. & Atamehr, A.** (2001). *A catalogue of mites and ticks (Acari) of Iran*. 192 pp. Islamic Azad University Scientific Publication Center.
- Kaz'mierski, A.** (1989) Revision of the genus *Tydeus* Koch sensu Andre', *Homeotydeus* Andre' and *Orthotydeus* Andre' with description of a new genus and our new species of Tydeinae (Acari: Actinedida: Tydeidae). *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 86, 289-314.
- Khanjani, M. & Ueckermann, E. A.** (2003) Four new tydeid species from Iran (Acari: Prostigmata). *Zootaxa* 182, 1-11.
- Krantz, G. W.** (1978) *A manual of acarology*. 2<sup>nd</sup> ed. 509 pp. Corvallis: Oregon State University Book Stores.
- Kuznetsov, N. N. & Livshitz I. Z.** (1973) Genus *Tydeus* (Acariformes, Tydeidae) from the Crimea. *Zoolicheskii Zhurnal* 52, 45-53.
- Thor, S.** (1933) Tydeidae, Ereyneidae. *Das Tierreich* 60, 1-84.

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