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**On the necessity of revisions the spider genus *Latrodectus*  
(Araneae, Theridiidae)**

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RIASSUNTO

Esperimenti di incrocio tra esemplari europei di *Latrodectus tredecimguttatus* ed esemplari del Kazakhstan, condotti in Germania hanno dato risultati negativi. Lo stesso risultato è stato ottenuto incrociando esemplari del Kazakhstan con *L. lugubris* (Duf.) delle Canarie simile per colorazione. Non è del tutto certo che le specie che si trovano in altre regioni nel mondo siano stati correttamente identificati.

Inoltre il veleno di specie diverse differisce considerevolmente e diversi sono anche gli effetti delle punture ed il corso della malattia. Possono quindi esservi anche errori di diagnosi. Tutto ciò rende difficile raccogliere significativi dati sulle statistiche delle punture e dei danni causati dai ragni del genere *Latrodectus*. Gli antiveneni esistenti sono spesso usati scorrettamente.

Parole chiave: *Latrodectus*, Ragni, Esperimenti di incrocio, Revisione.

SUMMARY

Crossing experiments between *L. tredecimguttatus* from Europe and specimen from Kazakhstan carried out in Germany have given negative results. The same results were obtained when crossing the spiders from Kazakhstan with *L. lugubris* (Duf.) similar to the last by the color pattern. There is no complete confidence that the species occurring in other regions of the world have been correctly identified.

In addition the venoms from different species considerably differs correspondingly, the effects of bites and the course of disease are also different, and diagnosis therefore can be wrong. All this impedes a collection of information on the bites statistics and real damage caused by the spiders of the genus *Latrodectus*.

The existing antivenoms are often used incorrectly.

Key words: *Latrodectus*, Spiders, Crossing experiments, Revision.

The northernmost limits of the desert zone in Eurasia and in the world in general, pass across the territory of Kazakhstan. The northernmost limits of distribution the widow spiders of the genus *Latrodectus* in Eurasia practically coincide with the semidesert zone and seem to pass near fiftieth degree (50°) of the North. Until recently black widow spider inhabiting the territory of the former Soviet Union and having the entirely black colour of abdomen's dorsum in adult females was referred to the species *Latrodectus tredecimguttatus* after the works of ROSSIKOV (1904) and MARIKOVSKIJ (1956). These authors based on the revision of spider genus *Latrodectus* made by F. PICKARD - CAMBRIDGE (1902) who considered black widow spider occurring in Southern Europe and North Africa to be the species *L. tredecimguttatus*.

By the way, the above mentioned works were not the only known in this region. Thus, KRYNICKI (1837) described the new species *L. quinqueguttatus* from southern Ukraine; WAGNER (1901) found a widow spider which he called *L. mac-cooki* (after MARIKOVSKIJ, 1956). MOTCHOULSKY (1849) described the new species *L. lugubris* from Kalmykia, southern Russia; it is evident that this author did not know that the same name was previously given to the species described by DUFOUR (1820) from Egypt. At the same time, the analysis of publications all over the world, especially the work of LEVI (1959), makes it the most possible to consider the entire black females of the widow spider from Central Asian region to be *L. lugubris* described by DUFOUR. This conclusion seems to be true after the vain attempts to carry out the comparative analysis of genitalia. According to LEVI, 1983, in the case of *Latrodectus* spp. the main features will be non-genital ones, such as the colouration of abdomen in adult females. As the morphology of genitalia in adult females of Italian *L. tredecimguttatus* is very similar, practically non-distinguishable from that in Kazakhstan specimens, as well as from the specimens of *L. lugubris* from Canary Islands, another features will be taken in account, for example colouration of abdomen females.

Black widow spiders, or "karakurt", occurring in Central Asia, differs by its colouration from Italian *L. tredecimguttatus* too strikingly to be conspecific with the last, as in adult females of karakurt the dorsum of abdomen is entirely black, without any light markings. The similar colouration in Canarian black widow spider makes their resemblance more likely. A well-known arachnologist from Germany Dr G. SCHMIDT

participated in the expeditions in Kazakhstan seemed to be first who paid his attention at this fact.

These interesting suggestions needed the confirmation. Mr. D. WEICKMANN-ZWOERNER from Germany carried out a crossing experiments between *Latrodectus* from Kazakhstan collected by us, and *L. lugubris* from Canary Islands. In the series of nearly 50 repeatabilities there were no sexual reactions between specimens from both populations (Ch. K. TARABAEV has been a participant of one repeatability). No reaction was also observed between karakurt from Kazakhstan and *L. tredecimguttatus* from Italy. Taking in account that the crossing with the development of fertile eggs in the foundation-stone specific feature, the black widow spider from Kazakhstan cannot be referred neither to *L. tredecimguttatus*, nor to *L. lugubris* from Canary Islands. Nevertheless, we are aware that our experiments are preliminary, but the practice of crossing the different specimens shows its reliability.

Despite the negative reaction between karakurt and Canarian *L. lugubris*, we could not find any differences in the morphology of genitalia and colouration of abdomen which constitute the main diagnostic features. Taking in account all this, a very important question arises, such as: whether the entirely black *Latrodectus* from Canary Islands is a real *L. lugubris*?

If nobody ever crossed Canarian specimens with *L. lugubris* from the type locality, the similarity of their genital morphology and colouration is quite insufficient for their identification. One must bear in mind an extreme complication in the taxonomy of the genus *Latrodectus* been noticed by many arachnologists including Professor Herbert LEVI (1959, 1983) who studied black widow spiders much more thoroughly than anyone else.

Up to now, there were no quite convincing systems of the genus *Latrodectus*. At the same time, this problem is not only of the fundamental scientific interest, as it is of great practical significance. Venoms from different species and, correspondingly, symptoms of bites and a course of disease caused by different species may strikingly differ. For example, antisera produced against the venoms are specifically used against the venom of *L. tredecimguttatus* over the whole area of this species at present being doubtful. Toxicologists find the differences in the venom action even within the different specimens of the same species (MARETIC, LEBEZ, 1979) although, taking in account all

mentioned above, we can doubt: if it was **really** the same species? An exact identification of different species is also important for biochemists studying venoms and often comparing the results of their investigation in the cases that cannot be comparable.

Summarizing all mentioned above and never being the first who calls for the problems of taxonomy in the genus *Latrodectus*, we consider it necessary to use in a greater extent the crossing experiments complementing these by the genetic, toxicological and other investigations which became possible in the modern conditions. Quite often the features of behaviour, the nest structure and other peculiarities observed by the specialists in nature carry important leading information. We are especially underlining the necessity of presence in the comparing experiments and analyses the materials taken from the type localities.

Being seriously interested in the problem of *Latrodectus*, we are appealing to the specialists for the possible co-ordination of the corresponding investigations. Awaiting the practical significance of this problem, it seems quite possible to appeal to the World Health Organization for the special fund, or grant to realize the co-ordinated purposive investigations over the whole area of distribution the genus *Latrodectus* comprising all the continents.

#### REFERENCES

LEVI H., 1959 - *The spider genus Latrodectus (Araneae, Theridiidae)*. Trans Amer. Micr. Soc., **28** (1): 7-43.

---- 1983 - *On the value of genitalic structures and coloration in separating species of widow spiders (Latrodectus sp.) (Arachnida: Araneae: Theridiidae)*. Verh. Naturw Ver. Hamburg (NF) **26**: 195-200.

MARETIC Z., LEBEZ D., 1979 - *Araneism with special reference to Europe*. Nat. Libr. Med. Bethesda-Nolit, Beograd. 255 pp.

MARIKOVSKIJ P.I., 1956 - *Tarantula and karakurt: morphology, biology, toxicity*. Frunze. 279 pp. (in Russian).

MOTCHOULSKY V. de., 1849 - *Note sur deux araignées venimeuses de Russie méridionale, qu'on croit être le Tchim des Kalmouks*. Bull. Soc. imp. natur. Moscou, **22** (1): 289-292.

PICKARD-CAMBRIDGE F.O., 1902 - *On the genus Latrodectus, Walck.* Ann. Mag. Nat. Hist. **10** (7): 38-40.

ROSSIKOV K.N., 1904 - *The venomous spider kara-kurt.* Agricultural monograph. Tr. Byuro entomol. **5** (2): 1-232. St. Petersburg (in Russian)