

# The Current Status and Trends in the Research of Chinese Arachnology

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This report includes 4 parts. I. The characteristic of Chinese Arachnological research; II. Systematic studies on Araneae we made in recent years; III. The survey of ecological study on Chinese Arachnology; IV. Biochemical study on the venom and silk proteins of spiders.

Part I, deals with the 4 characteristics of Chinese Arachnological research

1. The research work started somewhat lately, but with a faster development. The authors enumerated three data of the number of identified species in China, i.e. 438 species (Wang and Zhu, 1963) ; 1053 ones (Zhu, 1983) and 2159 ones (Chen, 1996). The number of 1996 is about twice that of 1983.
2. Research mainly limited on Araneae and Acari didn't cover all orders of Arachnida the research methods mainly are traditional. Some new methods have been tried in recent years, such as the technology of chromosome, isoenzyme and computer.
3. Three combination should be paid attention to in Chinese research work, Combination with teaching work, production and the investigation of natural resources.

Part II, Three questions about systematic studies on Araneae are discussed

1. The systematic system of the family Araneidae is based on Roewer-Brignoli-Platnick system 292 species belonging to 34 genera and 3 subfamilies were recorded in our monograph fauna Sinica Araneae: Araneidae" But considering the realities of our Country, we made some changes such as the taxonomic position of *Araneus dehaanii* and the revisions of some synonyms (i.e. *Neoscona holmi*, *Pardosa tschekiagensis*)
2. Distribution of Chinese Araneidae, Lycosidae and alticidae.  
There is a confused area between Oriental Realm and Palearctic Realm. The author believes that the demarcation line between these two realms in China may be districted between 34° - 37° °N.
3. The distribution characteristics of Oriental Realm in China are :
  - A. Species are plentiful. The number of the species of the above mentioned three families from Oriental Realm close to or more than half of total one from the Oriental and Palearctic Realms. While the area of Oriental Realm is only half of that of Palearctic Realm
  - B. The endemic species of Araneidae and Lycosidae is richer in Oriental Realm than in Palearctic Realm
  - C. The number of species of Hunan run first in China.  
Southern west China is the originating and evolutionary center of the spiders of the Oriental Realm in China according to the number of endemic species, the climate, transformation based on the threebridges and triple-stranded  $\beta$ -sheet domain and to obtain new type proteins with defined practical properties by protein engineering. Spider's silk is one of the best natural fibers. As for China, the study on this silk protein may have been made in our department. Xic Jin-Yun, Liang

Song-Ping, and their colaborers have been studing on the object. After analysing three species of spider by HPLC, they found that there were differences of the amino acid composition among the silk proteins from different species as well as the different silk proteins from one species. As for dragline of *Araneus ventricosus*, the small side-chain aminoacids are predominant. The bulk-side amino acids, such as Pro. Lys, and Leu. are abundant.

In their present paper, they have selected *Araneus ventricosus* for research. Severl experiments have been made on microstructure of its dragline and major ampullate silk gland; the spatial structure of dragline fibroin. Some results are the sack-like midplace of ampullate silk gland should be not only a reservior of silk fluid, but also a factory of protein synthesis; the data of mechanical property verified that the dragline of *A. ventricosus* has best elongivity; by means of partial acid hydrolysis and HPLC, several peptide fragments of the dragline fibron were purified; the sequences of these purified peptide are different from that of the fibron from *Nephiia clavips* except one fragment with the sequence of GYGPG which exists in both of the findshed from two different species of spiders.