

# THE TOXIC EFFECTS OF THE BITE OF A CLUBIONID SPIDER

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## ABSTRACT

An envenomation by an undescribed species of **Miturga** (Araneae, Clubionidae) in South Canterbury, New Zealand, is recorded.

## OBSERVATIONS

On 10 January, 1971, while collecting Arthropods on the Gram-pian Mountains, east of the MacKenzie Basin, South Canterbury, I was bitten by a large spider. Found under a stone at about 1500 m (ca 5000 ft.), it ran onto my open hand, and while trying to flick it into a vial, the spider bit me near the top of the second finger of the right hand.

The bite produced an instantaneous pain similar to a wasp sting. The punctures made by the chelicerae were clearly visible about 2.5 mm apart. I immediately sucked at the wound in the hope of removing some of the venom.

The site of envenomation remained painful, and the surrounding area (about 6 mm in diameter) became swollen and hard. About 20 minutes afterwards my knee joints began to stiffen, and 1½ hours after being bitten walking was painful, and after 3 hours could only be achieved with difficulty. Treatment that evening consisted of a hot bath, application of a local analgesic to the knees, and an elastic bandage on the more painful (left) knee. Two aspirins were taken on retiring and free perspiration occurred during the night.

Late in the following afternoon I was able to visit a medical practitioner at Wanaka, who prescribed antihistamine tablets and an antihistamine ointment for local application to the site of envenomation. By this time my knees were somewhat less painful, but the joints of the bitten finger, and the right wrist, were swollen and sore. On succeeding days my shoulder joints, elbows, groin, and various finger joints and thumbs became sore, recovered partly or completely, and in some cases relapsed. Muscle cramps, especially in shoulders, back and legs occurred spasmodically, but were considerably less severe than the joint pains. Physical activity caused increased severity of joint pains. The oral antihistamine treatment was effective in reducing the severity of the symptoms, which persisted for 45 days, with progressively decreasing frequency and intensity. The antihistamine ointment had no noticeable effect on the bitten finger, and was discontinued after 3 days. Elastic knee bandages and local analgesics were used when appropriate.

The observed symptoms are a characteristic reaction to injected foreign proteins in the blood. Slight local swelling was associated with the wound itself, but no necrosis developed. There was no nausea, paralysis or violent muscular spasms (which are frequently associated with envenomations of some spiders).

The spider, which I recaptured, has been identified by Dr. R. R. Forster as an undescribed species of a group which he tentatively refers to the Australian genus *Miturga*. He states that these spiders are at present placed in the family Clubionidae, but are really not closely related to the other Clubionids which have been recorded as poisonous (most of which belong to *Cheirocanthium*) in various countries.

I have also been bitten on the hand while gardening by *Dysdera crocata* (Dysderidae), a cosmopolitan species which feeds almost entirely on slaters (Forster, 1967). The bite produced a sharp pain which wore off after about 15 minutes. There were no further symptoms.

#### DISCUSSION

The following spiders have previously been recorded biting man and producing a noticeable effect, in New Zealand (Chamberlain, 1947): *Latrodectus katipo*, *Dipoena blattea* (Theridiidae), *Hexathele hochstetteri*, *Porrhothele antipodiana* (Dipluridae), *Ixeuticus subfasciatus* (Dictynidae) and *Cambridgea foliata* (Aglenidae). Clubionid spiders have not hitherto been known to affect man in New Zealand. Only the Katipo, *Latrodectus katipo*, has been known to cause fatalities in man. Envenomations by this spider always require treatment, and sometimes hospitalisation. Symptoms are very similar to those produced by other *Latrodectus* species (e.g. the American Black Widow, *L. mactans* and the Australian Red-Back, *L. hasselti*; cf. Herms, 1939: 520-523).

Except in South America, there are relatively few spiders other than *Latrodectus* whose bite is known to normally produce severe symptoms in man. The notorious European Tarantula (*Lycosa tarantula*) apparently does not normally cause severe symptoms except through the widespread belief that its bite always causes tarantism. This is a dancing mania, particularly characteristic of Italy during the Middle Ages, which is a nervous disorder thought to be caused by the bite of the Tarantula, but probably attributable in most cases to hysteria. The musical form known as the tarantella was thought to be effective in treating tarantism.

American "Tarantulas" include some highly dangerous spiders of South America (*Ctenus*, *Phoneutria* etc.) which have caused numerous human fatalities. The Australian Sydney Funnel-Web Spider (*Atrax robustus*) has been responsible for some fatalities in man. For reference see Leclercq (1969, Chapter 3).

Literature on spider venoms and their mode of action is concerned largely with spiders of medical importance (cf. McCrone, 1969; Welsh, 1964). Some spiders, especially Ctenids and Lycosids, produce local and often severe necrosis in the vicinity of the wound, apparently at least partly because of proteolytic enzymes in the venom. Most spider venoms which have been studied contain the tertiary amines histamine and serotonin. The most important role of these may be to cause pain, thus enhancing the defensive effect of the venom. They probably also facilitate the spread of lethal components of the venom by increasing blood flow and permeability in tissues near the wound.

The fractions of most spider venoms lethal to their Arthropod prey, and in appropriate cases, to mammals, appear to be polypeptides. These may produce generalised toxic effects on the whole organism, or neurotoxic effects (*Latrodectus*, *Ctenus* etc.), or may affect the liver and kidneys.

In my case, the symptoms suggest the presence in the venom of tertiary amines and one or more polypeptides. The absence of necrosis suggests lack or low concentration of enzymes.

## CONCLUSION

It is not advisable when collecting or studying spiders to handle them with bare hands. Most spiders are probably harmless, but the price of a mistake can be several weeks of discomfort and inconvenience.

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