

Bionomics and Vector Capability of *Ornithodoros savignyi* Audonin, 1827 in Tamil Nadu

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Of the eleven species of *Ornithodoros* ticks recorded from India, *Ornithodoros savignyi* alone is widely prevalent in Andhra Pradesh and Tamil Nadu States of the Peninsular India. In the latter State, the eyed tampan exists in hot dry deserted regions along the cattle trade routes and feed on the beasts of burden and man. Places of worship, where people congregate together, cattle shandies, villages squares, stockades, waiting sheds, Veterinary Dispensaries, shady trees where bullocks are cast and shod are places where these tampan are seen in abundant numbers. But seldom they occur in sites that are directly exposed to the sun.

They are notorious for the viciousness of their attack. They readily attack man, besides cattle, buffaloes, camels, sheep, goats, horses, dogs and several well animals.

On man, they fed on an average 30-40 min and the volume of blood they took varied from 3-6 times of their body weight. Besides loss of blood they cause dermatitis, pyrexia and lymphadenitis in man.

Introduction

Among the four genera of Argasid ticks, namely *Argas*, *Ornithodoros*, *Otobius*, and *Antricola*, the first three genera occur in India and are known for their attack on man, besides birds and animals. Of the three genera, ticks of the genus *Ornithodoros* have a wide distribution in the tropical India, parasitizing mammals including bats. One species *Ornithodoros savignyi* which normally feeds on cattle readily attack men who are closely associated with their domesticated animals.

As many as eleven species of *Ornithodoros* have been reported so far from India by various workers from different parts of

the country off a variety of mammals and birds (Miranpuri & Naithani 1978). Of the eleven species, only *O. savignyi* and *O. (Reticulinasus) chiropterphila* occur in the Peninsular India, the former attacking the domestic animals, while the latter, the bat.

In an ecological survey carried out in Tamil Nadu, *O. savignyi* was found to exist in the hot dry deserted regions of Ramnad, Tirunelveli, Pudukottai and Tiruchirappalli districts in certain isolated pockets. This tick is able to withstand long periods of starvation and has the greatest ability to limit water loss at high temperatures prevailing in those areas. This tampan is notorious for the viciousness of its attack.

It will readily attack man, particularly the poor farmers who move closely with their livestock. Besides man, this tampan attacks cattle, buffaloes, camels, sheep, goats, horses, dogs, all the laboratory animals and several wild animals.

Ornithodoros savignyi has widely spread in the above said districts of Tamil Nadu along the cattle trade routes on the soil underneath big shady trees, where they await and feed on the beasts of burden and men who are closely associated with them. Uppidamangalam cattle shandy of Tiruchirappalli Dt. is one such shandy where this tampan is seen in abundance.

Of the six abodes of Lord Subrahmanya (the Tamils adore Him as Shri Muruga) in Tamil Nadu, namely Thiruthani, Palani Thiruparankundram, Pazamudircholai, Swamimalai and Tiruchendur, the shore temple at Tiruchendur attracts the maximum pilgrims as this temple is situated very near to Rameswaram. The Tamil Saivites come in double bullock carts with their kith and kin and congregate for a few days at this temple. The "manal medu" (sand dune) seen around the temple is heavily infested with this tampan and people who sit there to meditate on Lord Subrahmanya are too frequently bitten by this tick. Their bullocks are tied around the temple underneath large shady trees in front of the "Velan Viduthi", the sandy soil of which is also heavily infested with this tampan, feeding upon the beasts of burden.

The animal casting pits or beds of the Veterinary Dispensaries in certain places of the above said districts, where the sick animals are cast over the sand for minor operations, are also heavily infested with this tampan. The tampan feeds on the animal patient and men within the shortest time and drop down quickly into the pit before the animal and the client leave the casting pit. The sand in such heavily infest-

ed pits are replaced once in five years as per the Animal Husbandry Departmental rules and this offers ample chances for its abundant breeding.

Some of the Taluk head quarters of the above said districts are also not spared by this tampan. The soil underneath large shady trees in the premises of the land registration office, taluk office, judicial courts and such other places are heavily infested by this tick. The villagers, when they visit such places in their double bullock carts after a sternness journey from their villages, spend the whole day in such places to settle down their property affairs are too frequently bitten by these tampan.

Underneath large cool shady trees where bullocks are cast and shod, shady places where village blacksmith works, in and around common wells, under shady places of the paddy fields where the rice plants are thrashed on the ground, village squares, stockades, village kraals and animal waiting sheds are some of the other places where the tampan are seen in abundance. But seldom they occur in sites that are directly exposed to the sun.

Sen and Fletcher (1962) too have observed the presence of this tampan in the passenger waiting sheds of some of the South Indian Railway Stations in these districts, as the waiting sheds in those days had sand flooring, with an easy access to the bullocks and other animals to these sheds. But however, due to the advancement of time and rapid improvement in sanitary conditions, the flooring in these sheds have now cement plastering and properly enclosed preventing the animals from entering into the sheds. Due to this, the tampan infestation has totally vanished from these places.

On an average, the tampan feed for 44 min and the volume of blood they sucked varied from three to six times of their body

weight. A single adult *tampan* can easily suck 0.5 to 2.0 ml. of blood from man and his domestic stock. If the hosts are attacked by a number of these *tampans*, they will very seriously suffer from a daily blood loss of several hundred milliliters and the degree of blood loss will be obviously harmful and sometimes fatal to the host. It is difficult to give precise figures for the total

Table 1

	Weight before feed (in mg)	Weight after feed (in mg)	Weight of blood taken (in mg)	Time taken to feed (in min)
	.0345	.1789	.1444	40
	.0452	.2020	.1561	47
	.0321	.1768	.1477	46
	.0323	.0839	.0516	40
	.0280	.1909	.1629	46
	.0393	.2217	.1824	48
	.0378	.0945	.0567	40
	.0512	.1595	.1083	45
	.0435	.2085	.1650	48
	.0185	.1588	.1403	40
Total	.3624	1.6755	1.3131	440
Average	.0362	.1675	.1513	44

number of these *tampans* which could kill domestic stock from the effect of exsanguination, but however the following observation made in the laboratory will give a theoretical idea of their haematophagous behaviour on an experimental calf.

Even on man, they feed on an average of 30 to 40 min and the volume of blood they took varied from three to six times of their normal body weight. Blood oozed out of the bitten spots for a few minutes attracting the *mucid* flies. At the bite site, within 24 hr a 0.8 cm diam. circular coloured infiltration with slight elevated swelling developed and persisted with acute itching sensation and mild pyrexia for a week. Slight swelling of the inguinal and the axillary lymph nodes (depending upon the bite site), painful to touch was noticed and felt in 48 hr time. Pain was also felt all over the body, especially at the joints. A course of tetracycline reduced the pyrexia, pain, itching sensation and swelling of the lymph nodes, thereby suggesting the transmission of some virus infection.

Nymphal *tampans*, experimentally infected with *Anaplasma marginale* of bovine origin, transmitted the organism successfully to the experimental calves.

References

- Miranpuri G S and Naithani R C 1978 *A Checklist of Indian ticks Ixodoidea: Acarina* (Izatnagar: Indian Veterinary Research Institute) 50 pp
- Sen S K and Fletcher T B 1962 *Veterinary Entomology and Acarology for India* (New Delhi: Indian Council of Agricultural Research) 668 pp