

Triatominae Bugs



Triatoma infestans



Triatoma brasiliensis



Rhodnius prolixus



Triatoma sordida



Panstrongylus megistus



Triatoma dimidiata



Rhodnius pallescens



Triatoma phyllosoma

This fact sheet covers the triatomine bugs. Several species of this bug are responsible for the transmission of Chagas disease which is a potentially life-threatening illness caused by the protozoan parasite, *Trypanosoma cruzi* (T. cruzi). It is found mainly in endemic areas of 21 Latin American countries, where it is mostly vector-borne transmitted to humans by contact with faeces of triatomine bugs, known as 'kissing bugs', among other names, depending on the geographical area. Currently 4- 4.5 million people are estimated to be infected worldwide, mostly in Latin America where Chagas disease is endemic (ECLAT data).

The disease is curable if treatment is initiated soon after infection. Up to 30% of chronically infected people develop cardiac alterations and up to 10% develop digestive, neurological or mixed alterations which may require specific treatment. Vector control is the most useful method to prevent Chagas disease in Latin America.

Distribution

Chagas disease occurs mainly in Latin America. However, in the past decades it has been increasingly detected in the United States of America, Canada, many European and some Western Pacific countries. This is due mainly to population mobility between Latin America and the rest of the world.

Infection can also be acquired through blood transfusion, congenital transmission (from infected mother to child) and organ donation, although these are less frequent.

Transmission

In Latin America, *T. cruzi* parasites are mainly transmitted by contact with the faeces of infected blood-sucking triatomine bugs. These bugs, vectors that carry the parasites, typically live in the cracks of poorly-constructed homes in rural or suburban areas. Normally they hide during the day and become active at night when they feed on human blood. They usually bite an exposed area of skin such as the face, and the bug defecates close to the bite. The parasites enter the body when the person instinctively smears the bug faeces into the bite, the eyes, the mouth, or into any skin break.

Triatominae bugs

There are > 100 species of triatomine bugs but only a few have any epidemiological significance. However some species have become highly adapted to domestic environments and are important vectors.

The most important species are:

Triatoma infestans – Argentina, Bolivia, Chile, Paraguay, Peru and Uruguay.

Triatoma brasiliensis – NE Brazil.

Rhodnius prolixus – Venezuela, Columbia, Ecuador, Guyana, Honduras, Nicaragua and El Salvador.

– Belize, Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Columbia and Ecuador.

Triatoma sordida – Argentina, Bolivia, Brazil.

Panstrongylus megistus – Brazil and Paraguay.

Triatoma dimidiata – Mexico, Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Ecuador and N. Peru.

Triatoma barberi - Mexico

Rhodnius pallescens – Panama and parts of Columbia

Triatoma phyllosoma group – Mexico

There are other species which may be secondary vectors compared to those listed above.

Habitat

Most species occupy mainly sylvatic habitats in close proximity to their vertebrate hosts. Hence the main vector species tend to occupy poor housing where they live in the cracks in mud walls or in the spaces or cracks in wooden houses. They will emerge from these spaces at night to feed on the sleeping people within the house. However the species differ in the habitats as many species can also be found away from houses in rock piles, rat burrows, trees, chicken coups etc. As Indoor Residual Sprays (IRS) have eliminated bugs from houses in some countries the bugs can become opportunistic and fly into houses to feed.

Life Cycle

The adults lay ovoid eggs which can be white to a pink colour and these hatch into first instar nymphs. There are 5 nymphal stages and at each stage a minimum of one blood meal is taken, it depends if the nymph is able to feed fully without being disturbed otherwise it may require extra feeds before it can moult into the next nymphal stage. They finally emerge as distinctive males or females. Each female can lay between 100 – 600 eggs during her adult life of 3 – 12 months.

Smaller species such as *R. prolixus* can complete egg to adult development in 3-4 months but larger bugs such as *T. dimidiata* and *P. megistus* can take 1-2 years. *T. infestans* one of the most important species can complete its life cycle in 6 months in warmer zones but will take a year in more northern cooler zones.

Bugs can survive starvation for several months.

Insecticide resistance

The main intervention against triatomine bugs is indoor residual spraying. The majority of treatments which have successfully reduced populations dramatically in some countries have used pyrethroids. Presumably due to the slow life cycle there are only a few reports of resistance emerging. There has been a limited dieldrin (OC) resistance in *R. prolixus* in Trujillo, Venezuela, since the early 1970s. There is some pyrethroid resistance in *T. infestans* in the region of the Argentina/Bolivia border.

There is some evidence in both cases, that the resistance may be due to cuticular changes affecting penetration (although there is still susceptibility to some OPs and carbamates). In these and other species, there is a range of natural susceptibility levels, so care should be taken when comparing susceptibility of a field strain with a very highly susceptible inbred lab strain that false positives for resistance are not recorded as has been the case in a few places.

Known Resistance

Insecticide resistance in triatomines has been detected with the following classes of insecticides but is fairly limited:

[Organochlorines Group 2A](#)

[Pyrethroids – Group 3A](#)

TEST METHODS

[WHO Test Methods – WHO/CDS/WHOPES/GCDPP/2001.1](#)

References:

Parasitology Today – 1997, Vol,13, N0.4 (142) p 141- 144.

Triatominae- Biology & Control – Dr. CJ Schofield – Eurocommunica Publications 1994