

Short Communication

A POINTER TO A NEW HALLUCINOGEN OF INSECT ORIGIN

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The purpose of this note is to draw attention to a long forgotten observation which points to the existence of a new hallucinogen, unique in that its source is an insect.

Augustin de Saint-Hilaire (1779-1853) travelled extensively in eastern Brazil between 1816 and 1823 and after his return to France published valuable observations on the geography, ethnology and natural history of the country. In two of his published works Saint-Hilaire (1824, republished Jenkins, 1946, p. 49; 1830, pp. 432-433) described the use of an insect as food and medicine by the Malalis, natives in the Brazilian province of Minas Gerais.

The relevant passage (1824) (translated) is as follows:

When I was among the Malalis, in the province of Mines, they spoke much of a grub which they regarded as a delicious food, and which is called *bicho de tacuara* (bamboo-worm), because it is found in the stems of bamboos, but only when these bear flowers. Some Portuguese who have lived among the Indians value these worms no less than the natives themselves; they melt them on the fire, forming them into an oily mass, and so preserve them for use in the preparation of food. The Malalis consider the head of the *bicho de tacuara* as a dangerous poison; but all agree in saying that this creature, dried and reduced to powder constitutes a powerful vulnerary (for the healing of wounds). If one is to believe these Indians and the Portuguese themselves it is not only for this use that the former preserve the *bicho de tacuara*. When strong emotion makes them sleepless, they swallow, they say, one of these worms dried, without the head but with the intestinal tube; and then they fall into a kind of ecstatic sleep, which often lasts more than a day, and similar to that experienced by the Orientals when they take opium in excess. They tell, on awakening, of marvellous dreams; they saw splendid forests, they ate delicious fruits, they killed without difficulty the most choice game; but these Malalis add that they take care to indulge only rarely in this debilitating kind of pleasure. I saw them only with the *bichos de tacuara* dried and without heads; but during a botanical trip that I made to Saint-Francois with my Botocudo, this young man found a great many of these grubs in flowering bamboos, and set about eating them in my presence. He broke open the creature and carefully removed the head and the intestinal tube, and sucked out the soft whitish substance which remained in the skin. In spite of my repugnance, I followed the example of the young savage, and found, in this strange food, an extremely agreeable flavour which recalled that of the most delicate cream.

If then, as I can hardly doubt, the account of the Malalis is true, the narcotic property of the *bicho de tatuara* resides solely in the intestinal tube, since the surrounding fat produces no ill effect. Be that as it may, I submitted to M. Latreille the description of the animal that I had made, and this learned entomologist recognised it as a caterpillar probably belonging to the genus "*Cossus*" or to the genus "*Hepiale*".

These observations are repeated in Saint-Hilaire (1839, pp. 432-433) with the addition of the information that the "bicho da tatuara" are half as long as the index finger.

The intoxicating effect of the larvae from bamboo has apparently been forgotten in Brazil and the seven volume Handbook of South American Indians (Steward, 1946-1959) while referring briefly to the observation of Saint-Hilaire in Vol. 5 (p. 557) gives no additional references. This is perhaps not surprising as the Malalis were a near-coastal tribe long ago overrun by the advance of civilisation. The name "bicho da tatuara" is, however, still in use and according to Ihering (1932, p. 236) and Costa Lima (1936, p. 266; 1967, p. 246) refers to the larva of the moth *Myelobia* (*Morpheis*) *smerintha* Huebner (Lepidoptera: Pyralidae: Crambinae).

Costa Lima (1967, p. 246) states that the larvae feed in common bamboos including *Nastes* (= *Nastus*) *barbatus* Trin., "*tatuara lixa*" (*Merostachys Ridelliana* Rupr., "*tatuara poca*" (*Merostachys Neesii* Rupr.) and "*tatuarasu*" (*Guadua* sp.) (Hoehne, F.C. et al.). The larvae feed inside the internodes of the bamboo and attain a maximum length of about 10 cm. The moth emerges in September and has frequently appeared in plague proportions. There are 24 species of *Myelobia* in South America, one in Mexico and one in Guatemala. The statement by Saint-Hilaire that the larvae are only found when the bamboo is in flower probably means that the host bamboos flower annually (as do a number of Brazilian species) and it is at that time that the larvae reach their maximum size. As the adult moth emerges in September this is probably in July or August.

It appears from the observations of Saint-Hilaire that the active substance is not destroyed by drying, and the need to remove the head and gut to avoid intoxication suggests that it is contained in the salivary glands. The active material could therefore be concentrated initially by removing the head plus salivary glands and part of the gut, discarding the rest of the body.

In view of the interest in the pharmacology of hallucinogens and the medicinal use of the dried and powdered larvae it would seem to be worthwhile to investigate what appears to be a new source, and as the insect is large and common it would be well suited to biochemical study. It is of particular interest that this would be the first hallucinogen of insect origin.

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