and kill the adults via systemic action of the compounds. Reservoir host vary between the species and species of *Leishmania*, making control efforts difficult and varied. Preliminary data on both laboratory and field studies with feed-through and pour-on products will be presented. The development of low-cost products for the control of sand flies is essential, especially in countries where the average annual income of households remains under $500. Information will be shared on the findings and long-term research projects underway.

Asymmetric introgression between sympatric molestus and pipiens forms of *Culex pipiens* (Diptera: Culicidae) in the Comporta region, Portugal

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Abstract

*Culex pipiens* Linnaeus 1758 is the most widespread mosquito vector of arbovirus in temperate regions. This species is split in two distinct forms, denoted *molestus* and *pipiens*, which have important ecological and physiological differences in their mating behaviour, egg development, host preferences, and in the habitats that they explore at northern populations. Hybridisation between the two forms has been reported in southern latitudes under sympatric conditions. However, the extent of hybridisation and its impact on the genetic divergence between forms has not been clarified in European populations.

In this study we have characterised an area of *Culex pipiens* populations from Portugal in order to: i) identify the sympatric occurrence of the two forms by ecological and genetic data; ii) determine the degree of genetic differentiation and estimate hybridisation rates; and iii) infer about the epidemiological consequences of hybridisation in this biological group.

Both ecological and genetic data obtained for 145 F1 families show evidence for the sympatric occurrence of the *Culex pipiens* forms (*molestus* and *pipiens*). Genetical analysis showed significant differentiation between the two forms, but it was also observed considerable levels of hybridisation (7%-10%). Interestingly, a higher proportion of admixture was found in *pipiens* individuals suggesting that introgression may be occurring asymmetrically, with more *molestus* genes being introgressed into the *pipiens* form. The observed pattern of asymmetric introgression is probably related to the different mating strategies adopted by each form. The differential introgression of *molestus* genes into the *pipiens* form may induce a more pronounced bias in the observed hybridisation rates.

Phylogeography of *Amblyomma variegatum* (Acari: Ixodidae), the main vector of *Ehrlichia ruminantium*: preliminary results

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Abstract

The hard ticks *Amblyomma variegatum* is the main vector of *Ehrlichia ruminantium* the pathogen responsible for heartwater or cowdriosis, a disease of ruminants. This tick originates from Sub-Saharan Africa and is now widely widespread. In Africa, *A. variegatum* occurs south of the Sahel area, right across the continent from Senegal through West Africa, the Central African Republic, southern Sudan and Ethiopia to the extreme north-western tip of Somalia. *A. variegatum* has been described for the first time in Madagascar in 1899, but its introduction is probably older and very likely concomitant with livestock introduction from Africa. *A. variegatum* has also been described in the Comoros, Mayotte, La Reunion and Mauritius islands. *A. variegatum* was probably introduced in the Caribbean area in the middle of the 18th century through cattle trade. Antigua and Guadeloupe islands were colonized first. Then all the Lesser Antilles were colonized as well as the Greater Antilles. A phylogeographic approach will be carried out at an intra-specific level with the aim to have an insight of the historical genetic and demographic phenomenon leading to the present distribution and the genetic structuring of the vector populations. The polymorphism of three mitochondrial-DNA genes (cytochrome b, cytochrome oxidase I and 16S rDNA gene) has been studied. Samples coming from Africa (Mali, Burkina Faso, Tchad), from Caribbean area (Guadeloupe, Marie-Galante, Antigua) and the Indian Ocean islands (Comoros, Madagascar) were analysed. The preliminary results seem to be in keeping with the historical data concerning the introduction of the tick in the different areas. This study will help to elucidate the history of the introduction of *A. variegatum* in the different Indian Ocean islands and in the Caribbean area.

Dramatic differences in action of hormonal analogues and agonists in *Culex pipiens* complex mosquitoes

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Abstract

Climatic changes have led to increasing interest for effective insect control, especially of hematophagous insects. This interest is provoked by number of diseases transmitted by some species from these insect groups. One of the many ways to control these species is the use of analogues and agonists of insect hormones. These analogues may be used in insecticides, or as agents in the pest management.