

TICK REPELLENTS PRODUCED BY TICK-RESISTANT HOSTS

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Studies have shown that beagle is more resistant to *Rhipicephalus sanguineus* sensu lato than English cocker spaniel (ECS). Behavioural studies have demonstrated that more ticks are attracted by extracts from ECS than from beagles. To test the hypothesis that resistant hosts produce repellent compounds, we undertook comparative chemical analysis on beagle odour and ECS and also used behavioural assays. The beagle odour extracts contained almost three times as many chemical compounds as ECS samples. Several non-host compounds were identified, i.e. 2-hexanone, benzaldehyde, nonane, decane and undecane. When 2-hexanone and benzaldehyde were combined, a repellency rate comparable or better than DEET was obtained. This study identified non-host semiochemicals that mediate avoidance of the beagles by *R. sanguineus* s.l. Lately, we report the use of prototype slow-release formulations of these compounds to reduce the burden of *R. sanguineus* s. l. on ECS dogs. Twelve dogs were randomly assigned to two groups with six dogs each. The treated group received collars with slow-release formulations of the compounds attached, while the control group received collars with clean formulations attached. Weekly, five environmental infestations were done and the number of ticks on the dogs was counted. All life stages of this tick species considerably decreased across time in the presence of the repellent formulation. For larvae and nymphs, a decrease in tick infestation was observed at the fifth count, and for adults, lower average counts were observed in all counts. The compounds did not interfere with the distribution of the ticks on the body of the dogs, as a similar percentage of ticks was found on the anterior half of the dogs. This study highlights for the first time the potential use of a novel repellent-based formulation for reduction of tick infestation on susceptible dogs. Using the same approach as mentioned before we tested if the *Amblyomma sculptum*-resistant host, donkeys (*Equus asinus*), produce repellents against *A. sculptum*. Sebum of ten donkeys and ten horses were collected. The odours were extracted and the compounds there of identified by chemical analysis. Six main compounds were identified been five occurring in both species and one exclusively present on donkeys. Bioassays with *A. sculptum* nymphs in a Y-tube olfactometer were done using the six compounds identified at four concentrations. Only donkey compound was repellent and maintained a statistically significant repellence rate at four concentrations tested. These results indicate that as well resistant dogs, donkeys also produce allomones (repellents) against *A. sculptum* which can be transformed in a new technology to control this tick species.

Keywords: allomone, non-host, control, ticks.

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