How Will Different Ticks Respond to Carbon Dioxide?

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Purpose: The Alfa-Gal mammalian meat allergy is caused by a tick. The tick in question is the Lone star tick or Amblyomma Americanum. This tick is the main cause of the allergy and my research was to find out if they are attracted to carbon dioxide as a means of finding its host. Procedure: I tested the attractiveness via time trials of six different species of ticks towards the source of carbon dioxide (dry ice). Data was collected to determine how quickly the ticks would approach versus repel from the dry ice. Conclusion: My results matched my hypothesis. My experiment uncovered that out of all of the ticks, the lone star tick was the only one to consistently seek out the dry ice and more vigorously approached it compared to other species. One could hypothesize that more tick bites are due to the lone star tick, therefore increasing the prevalence of Alfa-Gal in humans. Application: With this research, I propose that a device could be made to absorb carbon dioxide and release it at a rate simulating that of a human exhaling in order to attract ticks and remove them and their disease from the environment. These devices could be placed in parks and forests. Another application includes encouraging hunters and hikers to wear face masks which cover their carbon dioxide exhalation thereby decreasing tick bites. With these applications implemented, the rate of contractions of Alpha-Gal could drop dramatically.

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