Measuring the Effect of a Stimulating Decongestant in Combination With Other Substances on Cricket Action Potential

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The purpose of this experiment is to investigate how a stimulant decongestant in combination with household stimulant and depressant substances affects the action potential of Acheta domesticus, house crickets. Data were collected from 40 crickets randomly assigned to four equal groups: a control group; three treatment groups injected with the decongestant solution; a combination of decongestant and a stimulant; and a mix of decongestant and depressant. Each cricket's response was recorded for 7 minutes and 20 seconds to analyze neuron response activity by gently prodding at 40-second intervals (10 prods per cricket). The final data set consists of 400 observations measuring action potential in terms of number of spikes, spike frequency (Hz), and action duration (seconds). The statistical analysis was carried out by comparing group mean responses and conducting Chi-square significance tests. The analysis shows little difference in average reaction time between each treatment group. Compared to the control group, the group injected with only decongestant displayed a slight increase in response frequency and a large increase in spike number. The decongestant-depressant group showed a decrease in spike number but a very small increase in frequency compared to the control. Finally, the decongestant-stimulant group demonstrated a large jump in both spike number and response frequency. The data collected demonstrates the effect of decongestants on the action potential of crickets. The elevated responses caused by the decongestant and its combination with the stimulant sheds light on the possible dangers behind the unsupervised use of over the counter decongestants.

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