

PAPER

Dog-appeasing pheromone collars reduce sound-induced fear and anxiety in beagle dogs: a placebo-controlled study



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Context

Noise-induced fear and anxiety, such as thunderstorm and firework phobia, are significant behaviour concerns of dog owners for which treatment is often delayed until responses are extreme. Combinations of desensitisation and counter-conditioning techniques, pharmaceuticals and non-pharmacological approaches have been investigated, although few have been compared to placebo control.

The dog-appeasing pheromone (DAP) (Adaptil; Ceva Santé Animale) is a synthetic analogue of the pheromone secreted after parturition by the lactating bitch, which contributes to a puppy's sense of wellbeing when with its mother. DAP has demonstrated calming properties in many clinically tested stressful situations, but its effect on noise sensitivity has only been studied during firework exposure. This study evaluated its use for treatment of noise-induced thunderstorm fear, which is much more complex perceptually due to the variability of weather events. Consequently, a standardised and validated laboratory model using thunderstorm recordings was used to assess DAP against placebo.

Main conclusion

The DAP collar reduced fear and anxiety scores in response to a thunder recording and increased hide use. These findings support the use of DAP in the prevention and management of noise-related fear and anxiety.

Approach

Twenty-four adult beagle dogs of both sexes, naive to the thunderstorm test and with no history of noise phobia, were tested in a blinded parallel-group design including three thunderstorm tests per treatment group. The first test was a baseline thunderstorm session, which was used to allocate subjects to the placebo and DAP treatment groups. Each treatment group was then fitted with their respective collars and exposed to two additional thunderstorm tests over two consecutive days.

Each thunderstorm test was conducted in an open-field room over nine minutes. The behaviour of the dogs was scored over three three-minute intervals in which dogs were exposed to no sound, the thunder recording, and no sound again. This study looked at two measures of fear and anxiety. The first was an observational scale in which the dogs were ranked from 1 (no fear) to 6 (highest fear). The second was the measure of time spent in a hide box added into the test room.

The observational scoring was based on canine facial signalling and body posturing, and a compilation of the noise-fear signs described in the literature. Behavioural signs were evaluated over each three-minute interval as either active when associated with increased activity and reactivity, or passive when associated with decreased activity and autonomic signs. Each dog was also given a global fear/anxiety score for each three-minute interval based on the frequency and intensity of all signs.

A repeated measures analysis with before thunder scores serving as a covariate was conducted for each of the active, passive and global scores given, using difference from before thunder to during or following thunder. A mixed model for the repeated measures approach was used to test the effect of the product, the effect of the test and the interaction between test and product, thereby providing an estimate of product group differences at each time point (during and following thunder), while still taking into account the initial measurement of the corresponding parameter at each given test as a covariate. Additionally, use of the hide box was examined as a dichotomous variable.

Results

The two groups were well matched for sex and age, and no differences in baseline global measures during thunder were found. All anxiety measures were higher during thunder compared to following thunder ($P < 0.0001$), and both were consistently higher than before thunder. DAP significantly attenuated active and global fear and anxiety scores during ($P = 0.0037$ and $P = 0.0006$, respectively) and following ($P = 0.0015$ and $P = 0.0010$, respectively) the thunderstorm exposure. Although significant group differences were not found on passive scores, the relative increases in fear and anxiety from before to during and following thunder in the DAP group compared to placebo were marginally lower ($P = 0.0606$ and $P = 0.1119$, respectively) at test 2.

At baseline, no difference in the number of dogs using the hide box was found; however, there was a statistically significant difference at test 2 ($P = 0.0013$) with three times more dogs in the DAP group using the hide compared to placebo.

Interpretation

The results of this study support the use of DAP for noise-related fear and anxiety; however, dogs with thunderstorm aversion are affected by a variety of stimuli including wind, barometric pressure, darkening skies and lightning. While the laboratory model removes the confounds of a clinical trial related to housing, variable intensity and duration of stimuli, scoring methodology and owner influences, the model is only designed to evaluate the response to the noise component of a thunderstorm. In addition, these results suggests that the primary effect of DAP is calming of the active signs of fear and anxiety (increased activity), with perhaps less effect on the passive signs.

Significance of findings

The DAP collar provides a non-pharmacological option for the management of dogs with noise-induced fear. Specifically, after an initial exposure to anxiety-inducing noise stimuli, use of the DAP collar may be particularly suited for dogs demonstrating signs of active anxiety, such as agitation and increased activity.