



Effect of lavender (*Lavandula angustifolia*) essential oils on sheltered dog behavior: preliminary results

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Abstract: Dogs in a shelter environment need to cope with different types of stressors. Recent studies have shown that essential oils might be able to modify the behavior of dogs. The aim of the current study was to assess whether olfactory enrichment through lavender essential oils influences the behavior of sheltered dogs. 11 dogs (7 males and 4 females, castrated), aged between 18 months and 13 years were involved. Animals were divided into two groups: G1 (Experimental group and G2 (Control group).

G1 dogs wore a collar with a gauze on which 5 drops of lavender (*Lavandula angustifolia*) essential oil were laid once a week. The dogs of G2 wore a collar identical to those of G1 but without aromatization with lavender. The dogs underwent a 10-minute isolation period (T0) in an unknown environment, then they were brought back to their own box and their behavior was videotaped for 5 minutes. The same procedure was repeated after one (T1) and two (T2) months. A significant difference among the data of stress behaviors recorded at the different times is observable in dogs G2 ($\chi^2= 6.00$; $p=0.05$), while no difference was observed in experimental dog G1 ($\chi^2= 0.857$; n. s.).

Preliminary results of this study seem to indicate that the application of a collar impregnated with lavender essence can have a positive effect on the stress of the animal in the kennel, avoiding an increase in stress behaviors, as happens instead in the control group.

Key Words: dog lavender, essential oil, shelter, stress

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Introduction

Domestic animals, especially the dogs, have shared their lives with humans for a long time (Gazzano, 2014). However, this relationship is sometimes negatively influenced by the exhibition of aspects of their ethology (Mengoli et al., 2013) or by behavioral problems.

In dogs, intra and interspecific aggression, phobias and separation problems are the most frequent behavioral problems and reasons of relinquishment (Patronek et al., 1996).

Dogs in a shelter environment need to cope with different types of stressors: social (reduced intraspecific and/or interspecific social contacts), environmental (restraint for medical procedures, separation from a caretaker or handler) or psychogenic stressors (separation anxiety, use of aversive training methods by a previous owner/lack of ethological knowledge in caretakers) (Cozzi et al., 2016).

Recent studies have shown that essential oils might be able to modify the behavior of dogs and cats (Wells, 2004; Graham et al., 2004; Wells & Egli, 2015; Binks et al., 2018). In these studies, the welfare measurements included physiological indicators, such as corticosteroid levels (Beerda et al., 1998) or behaviors related to chronic stress, such as repetitive behaviors, nosing, paw-lifting, increased locomotion, displacement behavior or excessive drinking (Beerda et al., 1998; Haverbeke et al., 2008).

The aim of the current study was to assess whether olfactory enrichment through lavender essential oils influences the behavior of sheltered dogs.

Material and methods

In this research 11 dogs (7 males and 4 females, castrated), aged between 18 months and 13 years were involved. Animals were divided into two groups: G1 (Experimental group) consisting of 7 Animals (5 males, 2 females) and G2 (Control group), consisting of 4 Animals (2 males, 2 females).

G1 dogs wore a collar with a gauze (Fig. 1) on which 5 drops of lavender (*Lavandula angustifolia*) essential oil were laid once a week. The dogs of G2 wore a collar identical to those of G1 but without aromatization with lavender.

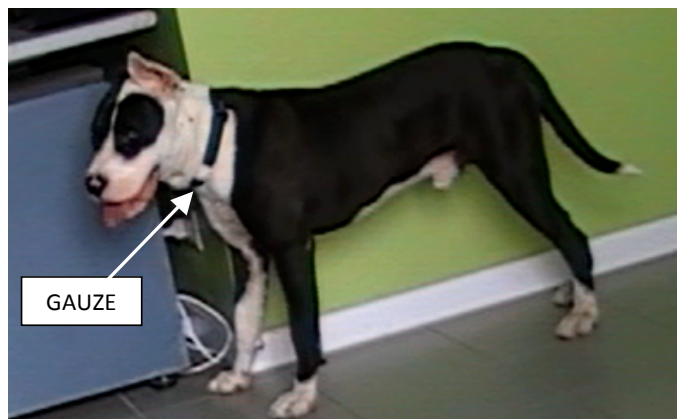


Figure 1. Dog wearing a lavender collar

The dogs underwent a 10-minute isolation period in an unknown environment, then they were brought back to their own box and their behavior was videotaped for 5 minutes (T0). The same procedure was repeated after one (T1) and two (T2) months.

For the analysis of dog behaviors, the ethogram previously described by Cozzi et al. (2016) was used, evaluating the total duration (seconds) of 13 behaviors considered realistic stress indicators (orientation at the door, turning the head, frequent and labored breathing, scratching the door, yelping, licking parts of the body, barking, elimination of feces and /or urine, tail between paws, scratching, shaking, licking the lips and howling). Statistical analysis was performed using Friedman and Wilcoxon tests.

Results

The figures 2 and 3 show the data relating to stress behaviors in the two groups considered at the different detection times.

A significant difference among the duration in seconds of stress behaviors recorded at the different times is observable in dogs G2 ($\chi^2= 6.00$; $p=0.05$; fig. 2), while no difference was observed in experimental dog G1 ($\chi^2= 0.857$; n. s.; fig. 3).

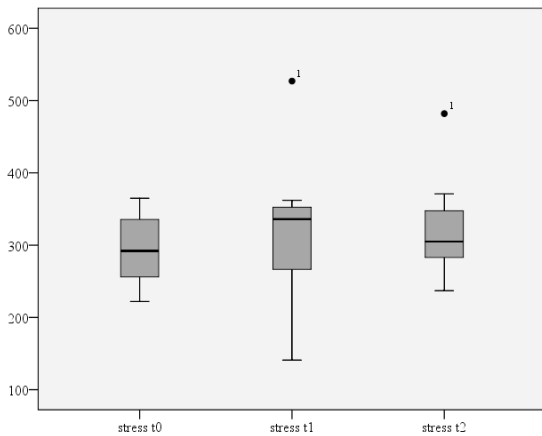


Figure 2. Duration (seconds) of the signs of stress displayed in the different times in a control group

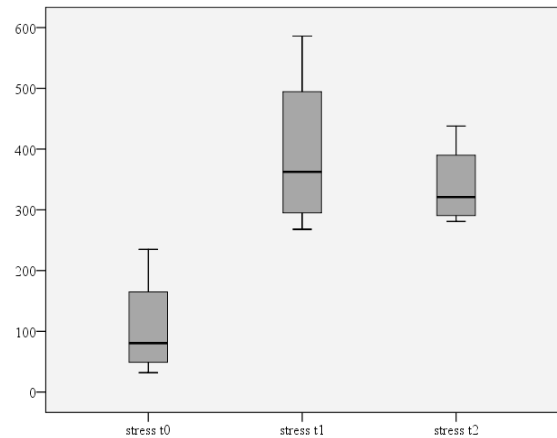


Figure 3. Duration (seconds) of the signs of stress displayed in the different times in a experimental group

Discussion

The dog has been sharing his life with man for many years and has undergone very important physical (Gazzano et al., 2013) and psychological changes. This animal is able to develop a strong attachment bond with the human being (Mariti et al., 2013), as well as with conspecifics (Mariti et al., 2018).

However, this relationship is sometimes interrupted, and the dog is relinquished in a shelter where he can stay for a long time. Rescue and rehoming shelters are frequently stressful and impoverished environments.

While diet manipulation seems to fail in improving dog behavior (Gazzano et al., 2019), other studies (Uccheddu et al., 2018) have shown the positive effect of the diffusion of essential oils on the affective states of the dog, but the effect of a collar impregnated with fragrant essences on the dog's behavior has never been evaluated.

Preliminary results of this study seem to indicate that the application of a collar impregnated with lavender essence can have a positive effect on the welfare of the animal in the kennel, avoiding an increase in stress behaviors, as happens instead in the control group.

Further studies will be needed to confirm these results, using a larger number of animals.

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Effetto dell'olio essenziale di lavanda (*Lavandula angustifolia*) sul comportamento del cane: risultati preliminari

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Sintesi

I cani in canile devono affrontare tipologie differenti di stress. Studi recenti hanno dimostrato che gli olii essenziali potrebbero essere in grado di modificare il comportamento del cane.

Lo scopo della presente ricerca è stato quello di verificare se un arricchimento olfattivo attraverso l'utilizzo di olio essenziale di lavanda, possa influenzare il comportamento di cani in canile.

Per la ricerca sono stati utilizzati 11 cani (7 maschi e 4 femmine, castrati) di età compresa tra i 18 mesi ed i 13 anni.

Gli animali erano divisi in 2 gruppi: G1 (gruppo sperimentale) e G2 (gruppo controllo). I cani del gruppo G1 indossavano un collare su cui era stata posizionata una garza che ogni settimana era impregnata con 5 gocce di olio essenziale di lavanda.

I cani del gruppo G2 indossavano un collare identico a quelli G1 ma non impregnato di olio essenziale di lavanda.

Gli animali erano sottoposti ad un periodo di 10 minuti di isolamento (T0) in un ambiente sconosciuto, quindi erano riportati nel proprio box ed il loro comportamento era videoregistrato per 5 minuti.

La stessa procedura era ripetuta dopo 1 (T1) e 2 (T2) mesi.

Una differenza significativa è stata rilevata tra la durata dei comportamenti di stress tra di versi tempi di osservazione nel gruppo G2 ($\chi^2= 6,00$; $p=0,05$), mentre nessuna differenza è stata osservata nel gruppo sperimentale G1 ($\chi^2= 0,857$; n. s.).

I risultati preliminari di questo studio sembrano indicare che l'applicazione di un collare impregnato con olio essenziale di lavanda può avere un effetto positivo sullo stress dell'animale in canile, evitando un incremento dei comportamenti di stress, come avviene invece nel gruppo di controllo.