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Effect of a synthetic equine maternal pheromone during a controlled fear-eliciting situation

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Abstract

Horses are known to show fear reactions when confronted with novelty and this can be a considerable hindrance in the context of working situations such as riding, dressage or racing. The aim of the present study was to measure the potential effects of a synthetic analogue of the Equine Appeasing Pheromone on saddled horses when subjected to a stressful situation using a double-blinded, placebo controlled study design. A group of 40 horses was analyzed during this study and horses were divided by sex, breed and reactivity into two homogenized groups. The test, which consisted of walking the horse through a fringed curtain, was selected from a range of tests which are used to assess behaviour for the selection of French breeding stock. Horses that could have been subjected to the test on a previous occasion, and therefore be familiar with it, were not included. Behavioural and physiological parameters were both taken into account with measures of time to go through the curtain, fear related typical behavioural patterns, based on available literature detailed in the bibliography, and heart rate being recorded. Parameters were analyzed by means of Mann–Whitney *U*-test. Significant differences were noticed between the two groups concerning heart rate data during the test ($U_{\mathrm{MeanHR}} = 100.5$, $p_{\mathrm{MeanHR}} = 0.02$; $U_{\mathrm{MaxHR}} = 75$, $p_{\mathrm{MaxHR}} = 0.001$) and during the whole measured period ($U_{\mathrm{MeanHR}} = 67$, $p_{\mathrm{MeanHR}} = 0.005$; $U_{\mathrm{MaxHR}} = 58$, $p_{\mathrm{MaxHR}} = 0.002$). Observation of the animals also revealed less behavioural items characteristic of fear within the treated group. As a result, horses performed the test with a better time performance when they received the pheromone analogue ($U = 62$, $p = 0.002$). The main parameter, area under the HR graph, is based on heart rate measure and performance. Differences

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noticed ($U = 74$, $p = 0.002$) for this parameter lead to the conclusion that horses who received EAP underwent less stress related consequences in terms of their cardiac physiology. As horses are subjected to a number of foreseeable stressful events this study suggests that the use of Equine Appeasing Pheromone could be a significant factor in improving the welfare of this species.
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1. Introduction

Domesticated horses live in an environment which is far removed from their natural habitat and as result is often lacking in terms of meeting specific equine needs. One potential consequence of this is an increase in levels of anxiety and in related behavioural disorders. When confronted by predators, horses have an instinct to flee and this instinct is heightened in stressful or constraining situations. However, in the modern domestic environment this behaviour is neither adaptive nor desirable for riders. These behavioural inconsistencies between horse and rider could explain various aspects of behavioural problems commonly reported in horses, which are predominantly influenced by fear and often result in detrimental consequences for both the horse and its rider (Broom and Johnson, 1993; Cooper and Mason, 1998; Mc Greevy, 2004).

Neuroleptics have been reported to be commonly used in the treatment of certain behavioural problems in horses (Dodman, 1987, 1988; Mc Donnell, 1998). However, their well identified side-effects (cognitive impairment, muscular tone deregulation, delayed reflexes) as well as the limitations due to anti-doping regulations, make their usage hazardous and maybe even impossible in practice. In addition these molecules only exert an action on the behavioural consequences of the underlying pathology and do not treat the pathology itself.

Behavioural modification programmes (Cooper, 1998; Mills, 1998) are often efficient but they require owner compliance and a minimum level of owner knowledge in terms of learning theories. Evidence relating to the role of misapplied learning theory in the development of equine behaviour problems would suggest that this latter criterion is not commonly met (Mc Greevy, 2001).

Pheromonotherapy (Pageat, 2001; Pageat and Gaultier, 2003) enables a simplification of treatment for anxiety and phobia related issues in various species (dogs, cats, rabbits, pigs) (Gaultier et al., 2005; Griffith et al., 2000; Mc Glone et al., 1993) but its effectiveness in horses has only been studied in isolated cases.

The aim of the present study was to investigate the effects of a synthetic Equine Appeasing Pheromone (EAP) through a double-blinded placebo controlled trial in which a group of 40 horses was submitted to a handling related, potentially fear-eliciting situation (passing through a fringed curtain to enter the stable).

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