

# Relation between different lifestyles and hair cortisol in horses (*Equus caballus*)

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## Introduction

In natural conditions, horses spend most of their time in groups, walking and grazing. However when these behavioural needs are not fulfilled, stress and stereotypical behaviours may increase. Welfare is therefore closely connected to management practices (feeding, housing etc...).

This study aimed to optimize a method to measure the incorporation of a stress related hormone (cortisol) in horse hair. Moreover, the influence of body location, behaviour, management regimes and personality on these hair cortisol levels were also investigated.

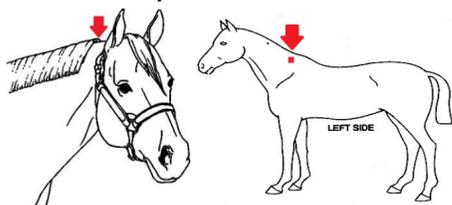


## Methods

153 horses were divided in 3 lifestyle groups:

- Free Roaming
- Riding School
- Trotter Racing

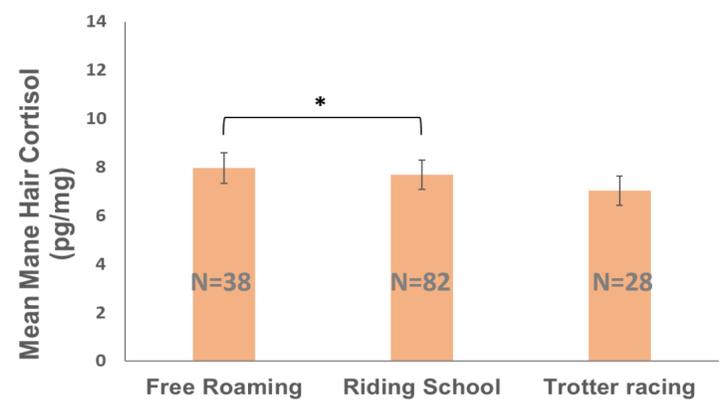
Hair samples were taken from the mane and withers. Cortisol levels were then measured with Radioimmunoassay.



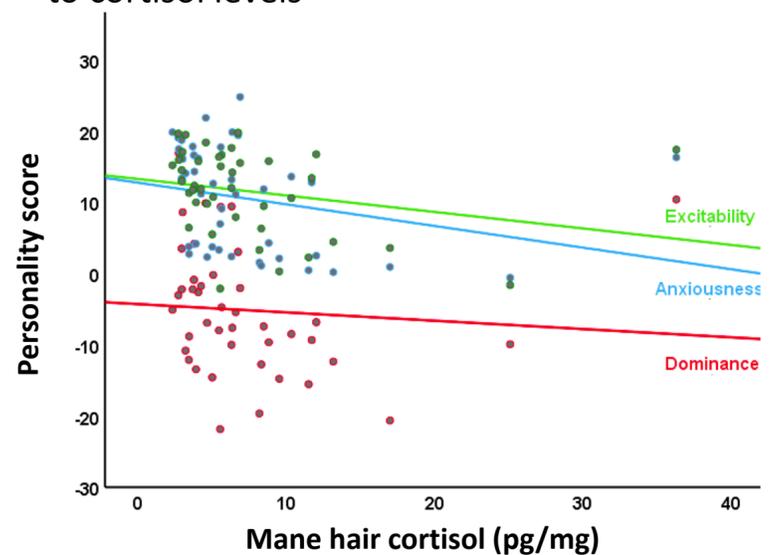
Behavioural observations were carried out on groups on pasture, and lifestyle and personality questionnaires were filled by the stable managers.

## Results

- Hair cortisol measures from both body locations did not differ and were significantly positively correlated
- The free roaming lifestyle group had significantly higher cortisol levels than the riding school group



- Dominance, anxiousness and excitability were personality traits that were negatively correlated to cortisol levels



- No stereotypical behaviours were observed throughout the study
- No correlation was found between cortisol levels and measured behaviours

## Conclusions

This research confirms that cortisol levels can be measured in horse hair, thus providing a method to analyse long term cortisol secretion retrospectively. In comparison to other studies, the hair cortisol concentrations measured in this study were low. Although there is a significant difference between lifestyle groups, no causation can be concluded from the present study. However, the negative correlation between hair cortisol and anxiousness is supported by other research.