

# Investigation into the effectiveness of mobile blue light therapy at advancing seasonal moulting in Thoroughbred yearlings.

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## Introduction

Seasonal production of the hormone prolactin is regulated by the lengthening hours of daylight during Spring and is in part responsible for the moulting of the heavy Winter coat in horses.

The aim of this experiment was to investigate whether timed blue light to one eye administered via a commercially available head worn light mask could successfully advance the annual moulting pattern in Thoroughbred yearlings.

## Methods

18 Thoroughbred yearlings were randomly divided into two groups and maintained outdoors for 22 hours a day in Hokkaido, Japan.

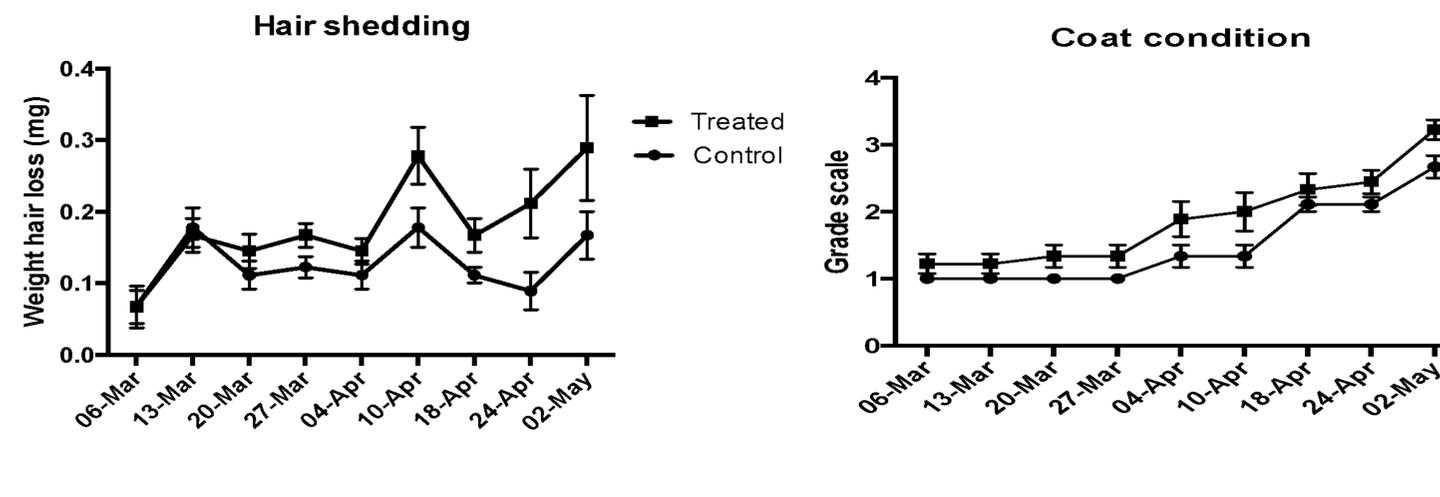
Beginning on March 6<sup>th</sup>, Group 1 (n=9) were fitted with Equilume™ Light Masks that administered low intensity blue light to the right eye daily from dusk until 11pm each night. Group 2 (n=9) were maintained under the natural photoperiod. At weekly intervals, average hair loss was recorded for each animal using a standardised technique that involved firmly grasping a tuft of hair approximately 2 cm in width between the thumb and forefinger and pulling. Loose (shedding) hairs pulled free, and non-shedding hairs remained. Three samples were collected from the shoulder, rib cage and rump of each yearling and weighed. Secondly, the overall coat condition was numerically graded according to the following scale; 1 = poor, 2 = average, 3 = good, 4 = very good. Blood samples were collected every 15 days for future serum prolactin concentration analysis.

## Results

### Equilume Light Masks



### Natural Photoperiod



## Statistical Analysis

Two-way repeated measures ANOVA was used to compare hair loss and coat condition between groups. A significant effect of time was observed for both parameters with increased hair shedding ( $P < 0.0001$ ) and improved coat condition ( $P < 0.0001$ ) evident as the season progressed.

Importantly, an effect of treatment was also observed with increased hair loss ( $P < 0.05$ ) and improved coat condition ( $P < 0.05$ ) in the Equilume™ Light Mask Group compared to the group exposed to natural photoperiod.

## Conclusion

We observed an advancement of seasonal hair shedding using the Equilume™ Light Masks when fitted on March 6<sup>th</sup>. We are confident that had the trial commenced a month earlier we would have seen a more pronounced difference between the groups.

In conclusion the use of mobile light therapy on Thoroughbred yearlings in Spring is effective at advancing moulting of Winter Coats

## Acknowledgments

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