

Adaptogenic and Immunomodulatory Activity of Ashwagandha Root Extract: An experimental study in an equine model

Frontiers in Vet. Science. 2020 Sep 29;7:541112. Priyanka G, Kumar BA, Lakshman M, Manvitha V, Kala Kumar B.

Introduction

Horses are highly responsive to environmental stimulation (stress). The ability to adapt to various sources of stress remains a great challenge for horses. Supplements containing adaptogenic botanicals, such as Ashwagandha root extract, may help maintain proper physical and psychological balance, or homeostasis, in horses. This study was designed to determine the effects of Ashwagandha root extract on horses exposed to three commonly occurring types of stress in the equine environment: exercise, noise, and separation.

Materials and Methods

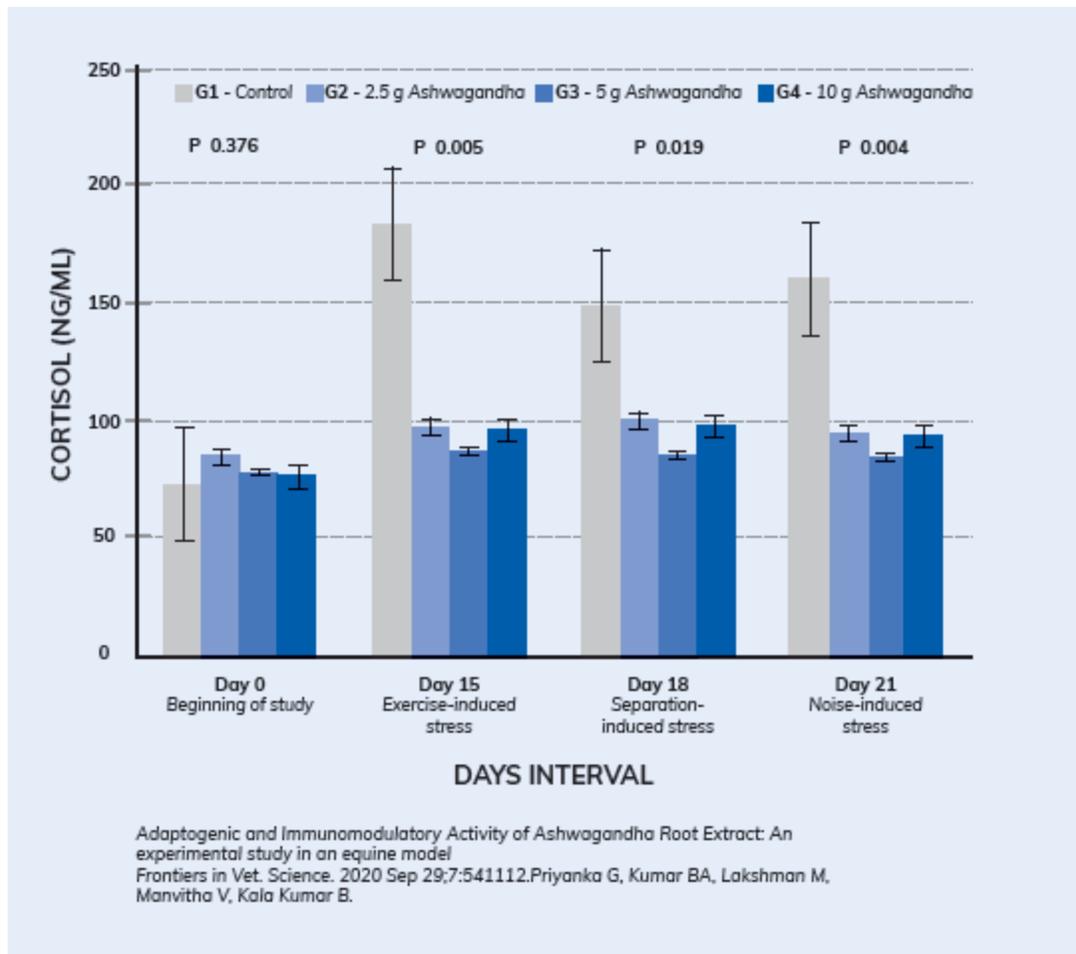
Twenty-four (24) healthy Kathiawari horses of both genders, aged between 5 and 10 years, were selected to participate in this 21-day study. The horses were divided into 4 groups with 6 horses in each group. All horses were fed a normal diet of concentrate, hay, and grass and given 1 hour of exercise every day. Group 1 (G1) was used as a control group and given only the normal diet. The treatment groups G2, G3, and G4 were given 2.5 grams/day, 5 grams/day, or 10 grams/day, respectively, of Ashwagandha root extract mixed with jaggery (unrefined cane sugar). Blood collection was carried out on Day 0 to establish a baseline for red and white blood cells, serum biochemistry, stress hormones, antioxidant profile, and immune markers. On day 15, all horses were exercised for 2 hours to induce stress. Blood samples were collected within 10 minutes of discontinuing exercise. On day 18, all horses were exposed to separation stress by isolating them from their regular herd or companion for 1 hour. Blood samples were collected within 10 minutes. On day 21, all horses were exposed to noise stress for 1 minute then blood samples were collected within 1 minute.

Results

All horses remained healthy throughout the study. Over the 21 days, there was a statistically significant increase in red and white blood cells between Group 1 (G1, the control group), and the three treatment groups (G2, G3, and G4). There was also a significant difference in the antioxidant markers glutathione, superoxidase dismutase, and TBARS between the control and treatment groups on each day the horses were subjected to stress. In terms of stress hormones, cortisol and epinephrine were significantly reduced in the three treatment groups compared to the control group, while levels of serotonin (responsible for feelings of well-being and contentment) were significantly higher in the treatment groups. In addition, levels of the inflammatory marker IL-6 were also significantly decreased in the three treatment groups compared to the control group.

Conclusion

These results suggest that Ashwagandha root extract may assist horses in coping with physical and psychological stress. Significant differences were seen in the levels of antioxidant markers, stress hormones, and indicators of inflammation between the treatment groups and control. These differences demonstrate the ability of Ashwagandha to act as an adaptogen and aid the body in properly responding to stress and maintaining homeostasis.



Average levels of the stress hormone cortisol were significantly lower ($p < 0.05$) for all three treatment groups compared to the control group on each day horses were exposed to stress.