

## POST-RACE PLASMATIC ANGIOTENSIN CONVERTING ENZYME IN THOROUGHBRED HORSES WITH OR WITHOUT FUROSEMIDE

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**Introduction:** Exercise-Induced Pulmonary Haemorrhage (EIPH) results from hypertensive episodes associated with intense exercise and can negatively impact on athletic performance. ACE shedding from the pulmonary endothelium is increased during lung disease. This study investigated an association between EIPH and post-race plasmatic ACE and the effect of furosemide administration on ACE activity.

**Methods:** Blood samples from 73 horses were collected post-race. ACE activity was measured using a fluorimetric method. Respiratory endoscopies determined occurrence and grade of EIPH. Comparison between horses medicated with furosemide pre-race or not medicated and EIPH positive or negative were conducted by independent samples t-tests. Regression analysis was used to investigate the association between ACE activity and EIPH grade for all horses. Other variables analysed included time to endoscopy and haematocrit.

**Results:** Mean ACE activity in horses not medicated with furosemide ( $n = 47$ ;  $91.7 \pm 15.9$ ) was significantly higher ( $p = 0.002$ ) than in horses medicated ( $n = 26$ ;  $79.6 \pm 13.9$ ). Horses EIPH positive and medicated with furosemide ( $n = 20$ ; ACE  $78.2 \pm 11.9$ ) had significantly lower ACE ( $p = 0.009$ ) than horses EIPH positive not medicated ( $n = 17$ ; ACE  $90.9 \pm 15.9$ ). Regression analysis indicated a polynomial relationship between mean ACE activity and EIPH grade (0, 1, 2 or 3+4+5; adjusted  $r^2 = 0.99$ ;  $p < 0.001$ ). No other comparisons were statistically significant.

**Conclusion:** Results indicated associations between ACE activity, EIPH grade and furosemide administration and investigations in the potential use of ACE as a biomarker for EIPH severity in controlled studies are warranted.

**Declarations:** This research was conducted with Ethics approval from The Animal Ethics Committee at WINTEC, and informed owner consent was obtained for horses include in this study. This research was partially funded by a Research Grant from WINTEC. There are no competing interests identified.