Physiological and Pathological Effects on Equine Reticulocyte Counts in Peripheral Blood

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Introduction

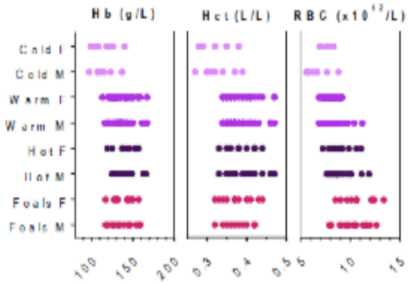
- Reticulocytes (RET) are generally considered absent from peripheral blood in horses
- Modern blood cell analysers can detect and quantify low numbers in equine blood

Objectives

- We assessed whether RET counts were affected by physiological and pathological factors

Methods

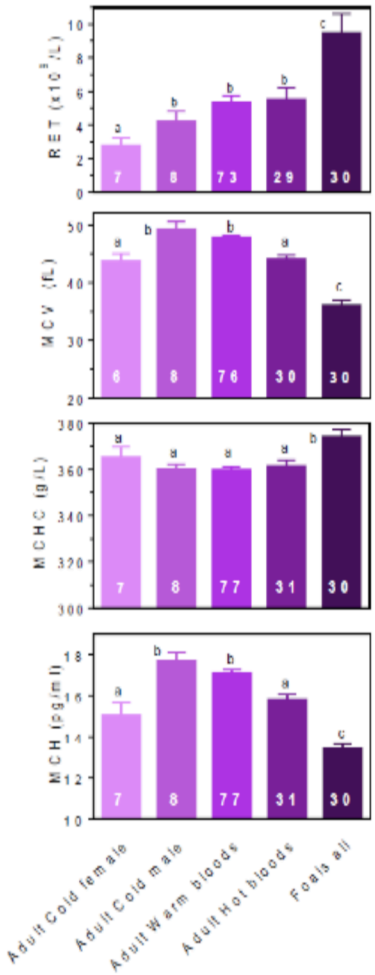
- The ADVIA 2120 haematology analyser was used to determine RET in 370 clinical cases
- Reference ranges were established by screening for horses within published intervals for haematocrit, haemoglobin and erythrocyte counts for normal hot (Thoroughbreds), warm (Sport horse) and cold-blooded (draft, ponies) horses and for foals of different ages
- Values from horses with disease (dysproteinemias, inflammation, myopathy, colic), and statistical outliers (>3 SD from mean of others) were excluded
- Breed, gender, age, anaemia and disease effects were tested for
- A reference range of all breeds and both genders for adults was determined
- Data shown as mean±SD, n



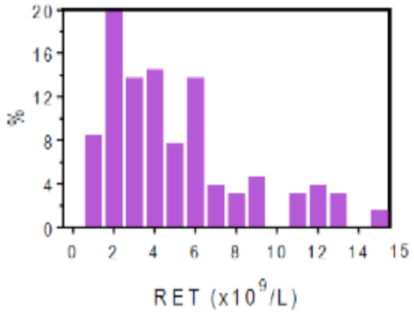
Results

- In adults, RET counts for cold-blooded horses (3.5±1.7, 15) were one-third lower than warm (5.3±3.7, 73) and hot (5.5±3.9, 29) blooded breeds
- Hot-blooded foals (8.1±4.9, 21) and warm-blooded foals (7.2±2.93,6) had ~40% higher RET than adults (not tested in cold bloods)

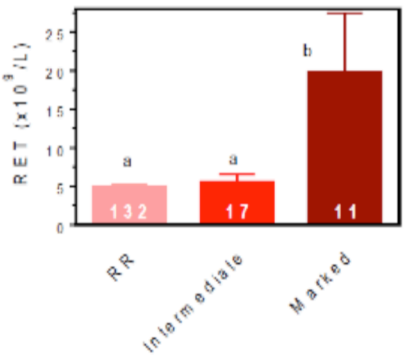
- Males had 50% higher RET than females for cold bloods but not for other breeds (4.2±1.8, 8 vs 2.8±1.2, 7)

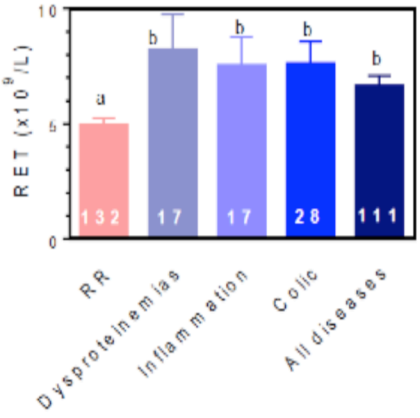


- Reference range (RR) for all adults (calculated as 2.5 to 97.5 percentiles): 1.2 – 13.3 x10^9/L (4.9±3.4, 132)



- Compared to RR, RET were increased 4-fold by marked anaemia (drop of >40% lower limit of normal haemoglobin; 19.8±25.6, 11) and 25% with disease (6.62±4.9, 111)





Conclusions

- Breed, gender and age have up to 2-fold additive increases on RET counts
- RET were increased by up to 4-fold with marked anaemia and only by 25% with other diseases
- Compared to other species, RET counts are substantially lower in horses and mildly affected by physiological parameters and various non-blood diseases and moderately-to-markedly affected by severe anaemia

References

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