

Source of selenium fed to mares affects milk and Se status of their foals

C. Leleu¹, G. Du Laing², J. Pincemail³, PH. Pitel⁴, C. David⁵, F. Paboeuf⁶ and P.M. Rovers-Paap⁶

¹ Equi-Test, Grez en Bouère, France

² Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium

³ University, Liège, Belgium

⁴ LABEO, Caen, France

⁵ REVERDY Nutrition Equine, Juvigny-le-tertre, France

⁶ Orffa, Werkendam, The Netherlands

INTRODUCTION

Selenium (Se) is an essential trace element for equine health and its dietary intake is crucial to cover the physiological requirements. Optimal selenium status has been associated with improved antioxidant status and improved immune response in many animal species. Selenium sources can be either inorganic (often sodium selenite) or organic (selenized yeasts or L-selenomethionine). Organic selenium in the form of L-selenomethionine is utilized in the body as amino acid and is built into animal protein like muscle tissue and milk. The present study was to evaluate the efficiency of two dietary Se sources in mares, during gestation and lactation, in their potential to affect Se concentration in the milk and the Se status of their foals.

MATERIALS & METHODS

- 16 Standardbred mares
- 2 dietary treatments
 - 2 mg/d Se from Sodium selenite (NaSe) (n=8)
 - 2 mg/d Se from L-selenomethionine (SeMet, Excential Selenium4000, Orffa) (n=8)
- Duration of supplementation: last 3 months of gestation and 1st month of lactation (120 days)
- Evaluation of :
 - Se status of mares at T0 and T90 (foaling)
 - Se concentration of colostrum and milk (T90, T97, T120)
 - Se status of foals at T97 and T120

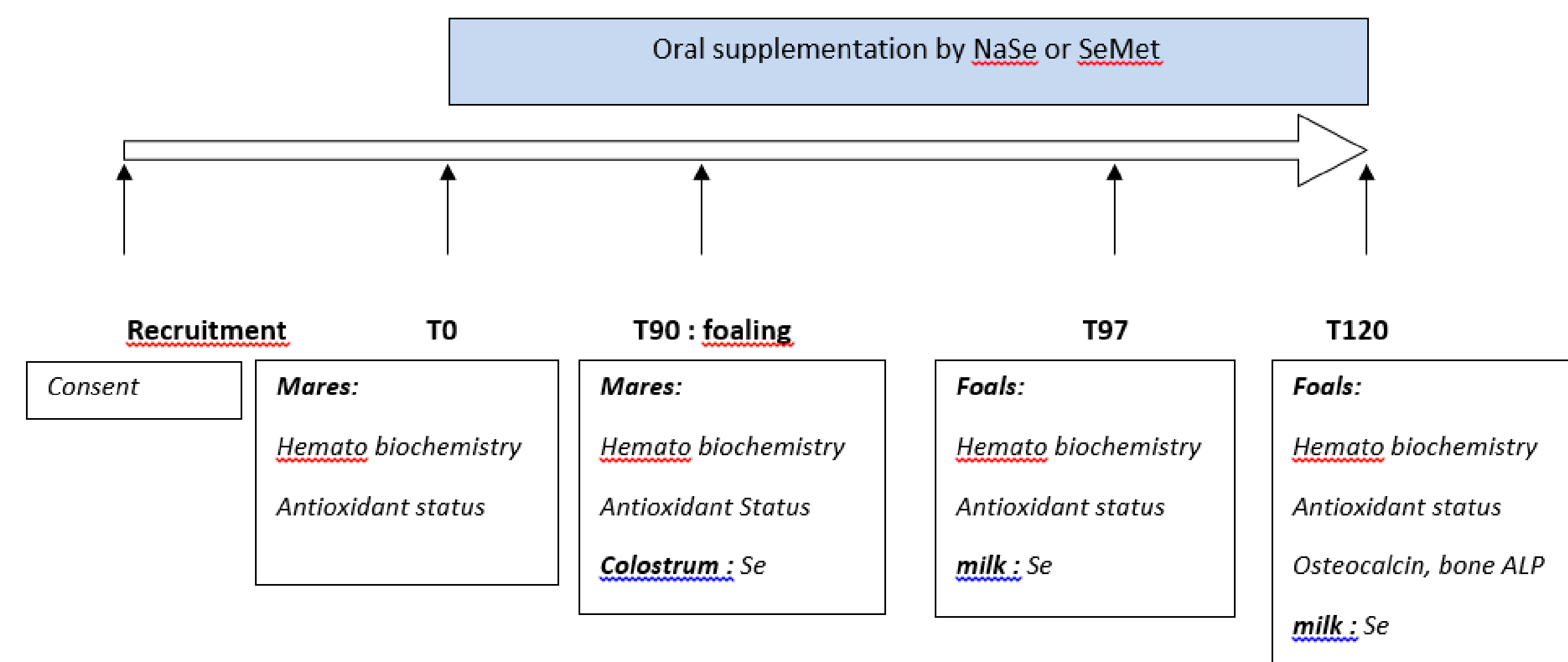


Figure 1: Experimental schedule

RESULTS

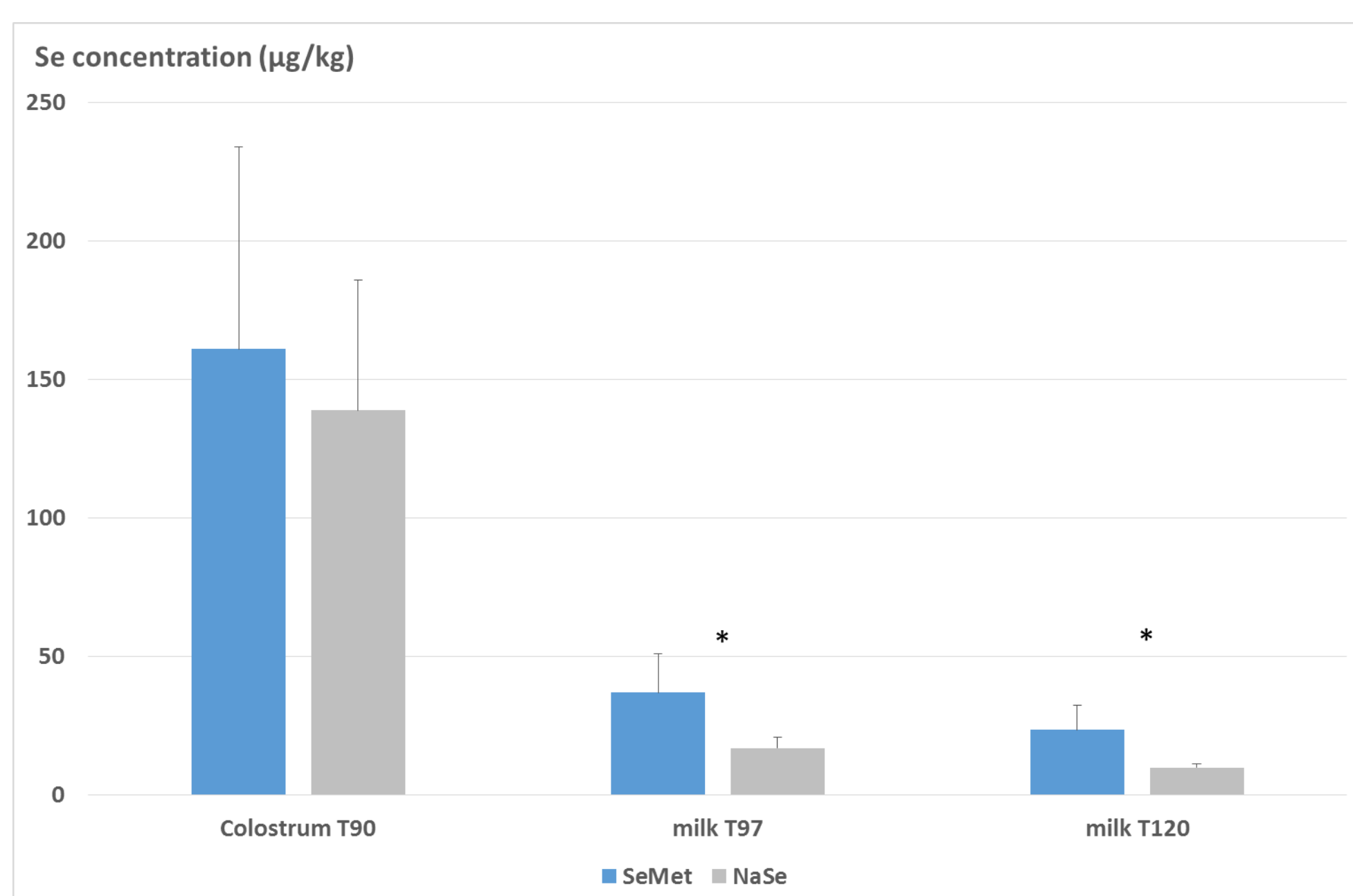


Figure 2 : Colostrum and milk Se concentrations at T97 and milk at T120 in SeMet and NaSe groups. (mean ± sd)
*: p < 0.05

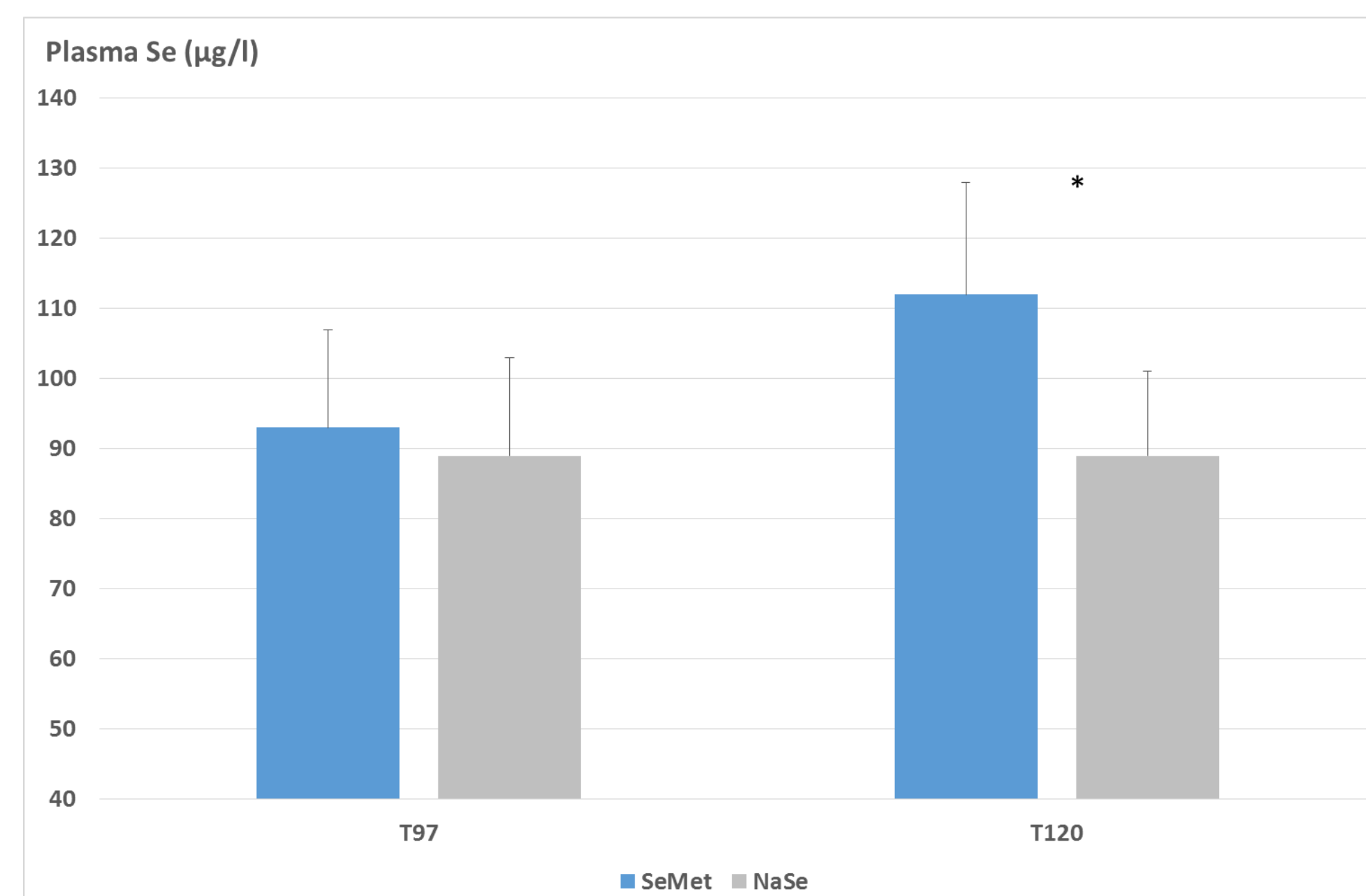
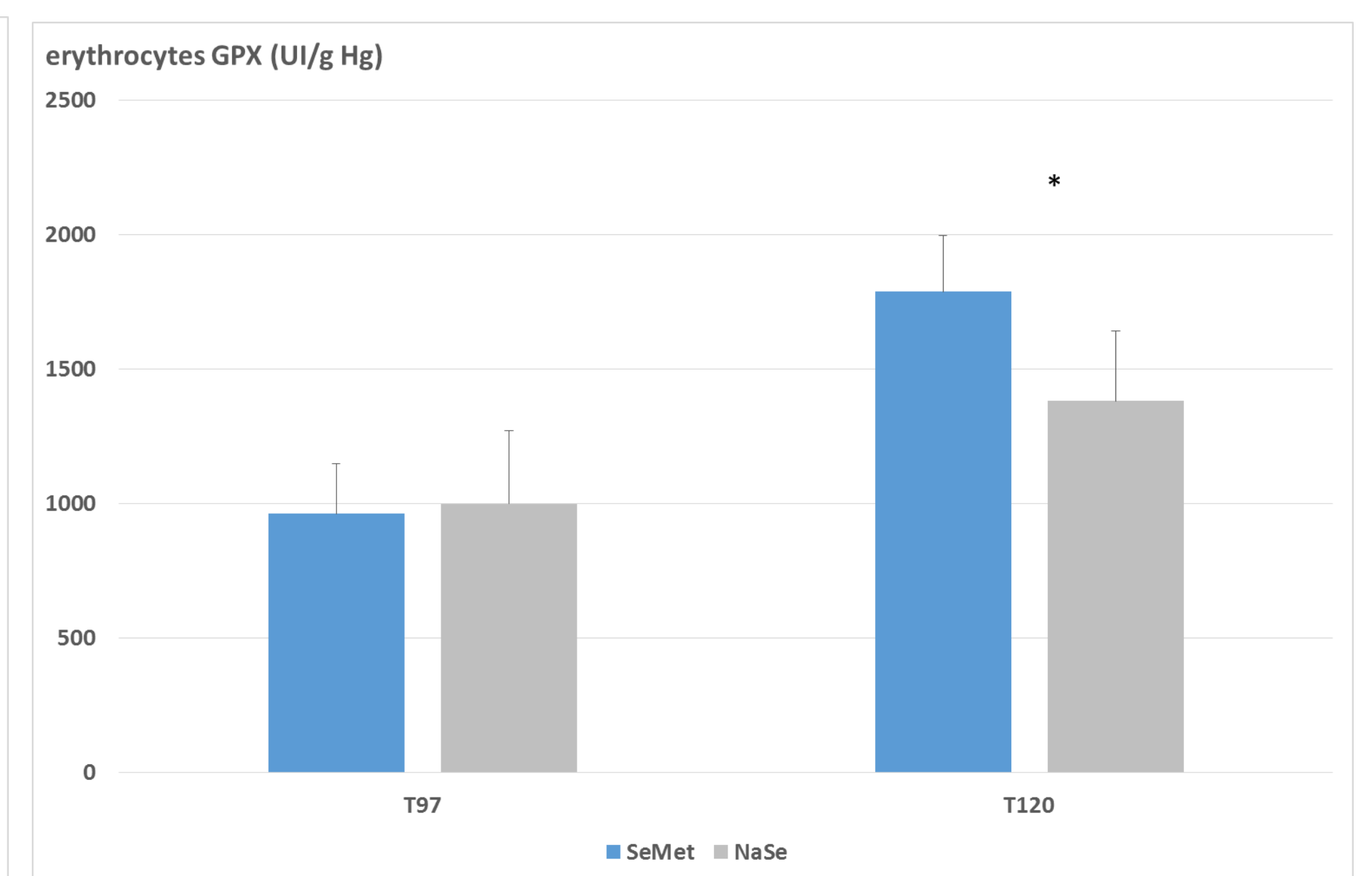


Figure 3 and 4 : Plasma Se and GPX levels in foals at T97 and T120 in SeMet and NaSe groups. (mean ± sd)
*: p < 0.05



- In mares, Se supplementation increased the plasmatic Se and GPX -value independent of the source.
- Mean Se concentration in the colostrum was similar in both groups, but mean milk Se was significantly higher in SeMet compared to NaSe at D97 (37 vs 17 µg/ kg respectively) and D120 (23.5 vs 10 µg/ kg respectively).
- At D120, significantly higher plasmatic Se and GPX -values were found in foals from the SeMet group compared to NaSe.
- At D120, the bone specific alkaline phosphatase (ALP) in foals was significantly higher in SeMet compared to NaSe, but osteocalcin was similar.

CONCLUSION

Selenium source clearly affects the milk Se of the mare and plasmatic Se, GPX -value and bone specific ALP in their foals.