

Stability of retinol binding protein after 36 months' storage at -20°C

Tracey A Mare¹, James Luxton¹, Ruvini NK Ranasinghe¹, Cristina Santos¹, Royce P Vincent¹

¹Contract R&D Department (Viapath), King's College Hospital NHS Foundation Trust, London

Introduction

Retinol is a common indicator of vitamin A status. Retinol forms a complex with retinol binding protein (RBP) at a ratio of 1:1 and is thus transported in the serum. RBP is easily measured in serum to provide information on retinol and vitamin A concentrations. Retrospective or small-scale clinical research studies may store serum samples for long durations prior to RBP analysis. The aim of this study was to evaluate the stability of RBP concentrations during prolonged storage at -20°C.

Methods

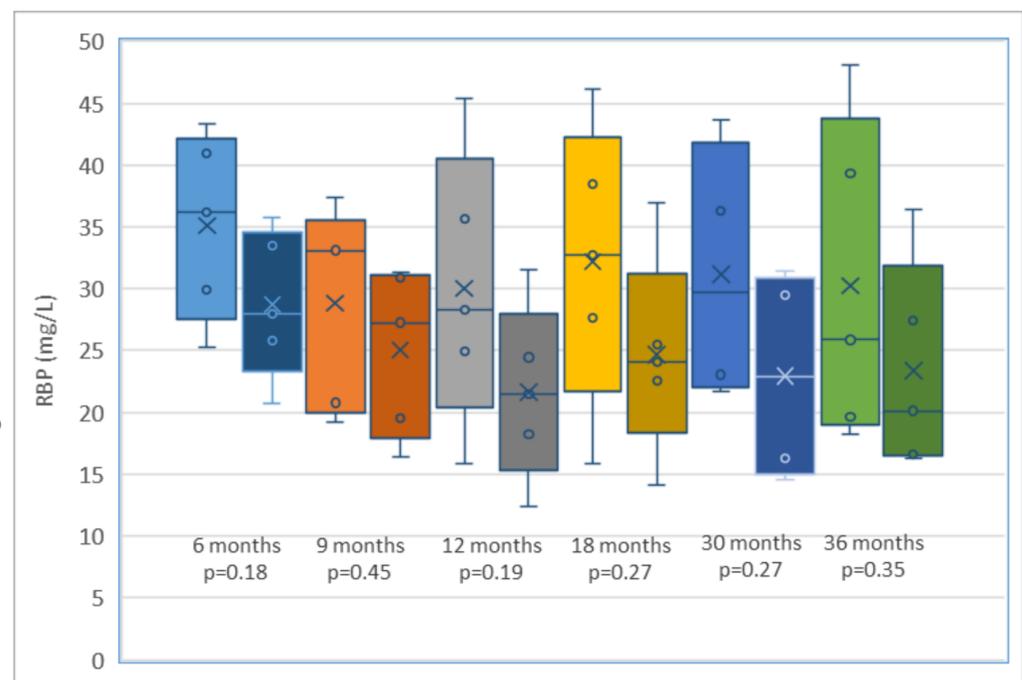
RBP was measured using the quantitative sandwich enzyme immunoassay technique (R&D Systems). A total of 29 serum samples, stored at -20°C for 6, 9, 12, 18, 30 and 36 months were analyzed and the results compared with the original results to evaluate sample stability and reproducibility.

Discussion

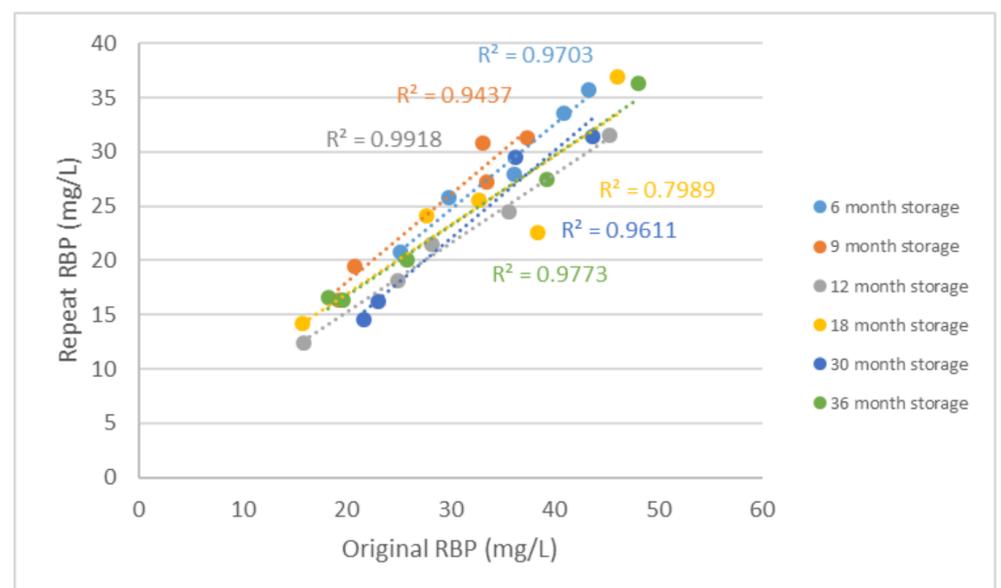
The immunoassay had a mean minimum detectable concentration of 0.000224 mg/L, with <10% inter- and intra-assay coefficient of variance. The concentrations of RBP in the samples analyzed ranged between 15.80 and 48.11 mg/L. The manufacturer quoted reference range is 18 – 50 mg/L.

All 29 serum sample results were comparable and showed no significant difference when compared using linear regression analysis and T-test assuming equal variances: 6 months' storage (n=5, R²=0.97, p=0.18), 9 months' storage (n= 5, R²=0.94, p=0.45), 12 months' storage (n=5, R²=0.99, p=0.19), 18 months' storage (n=5, R²=0.80, p=0.27), 30 months' storage (n=4, R²=0.96, p=0.27), 36 months' storage (n=5, R²=0.98, p=0.35).

Results



T-test assuming equal variances: showed no significant difference (p=>0.05) between the original and repeated RBP results.



Linear regression analysis: data is comparable between the original and repeated RBP results.

Conclusion

Our study showed that retinol binding protein concentrations are stable for up-to 36 months when stored at -20°C.

Contact Information

Email: tracey.mare@nhs.net

Tel: +44 203 299 5548