



The Binding Site Ltd,  
P.O Box 11712, Birmingham,  
England, B14 4ZB  
Tel: +44 (0) 121 436 1000  
Fax: +44 (0) 121 430 7061  
www.freelite.co.uk

## **Freelite™ Technical Bulletin No.F001.01** **4<sup>th</sup> September 2006**

As the number of laboratories and physicians using Freelite™ serum free light chain assays continues to grow, we will be sharing new information on the use of these assays via Technical Bulletins.

As part of our ongoing monitoring of the use of Freelite™ for measuring free light chains in serum we would like to inform all users of some recent observations apparent when results from large cohorts of samples are plotted on a kappa/lambda dot plot. Samples within the cohort giving results below the standard measuring range, when measured at a lower dilution, give slightly lower values than would be expected. This causes a “gap” on the plot just below the standard measuring range which will not contain any results. Observations of results generated on the Roche Modular P analyser shows the size of this area to be of 2-3 mg/L between values of 4mg/L and 7mg/L for Lambda and between 2mg/L and 4mg/L for Kappa. Ongoing studies suggest that other analysers may give similar results.

This effect is thought to be due to a suppressive interferent. When samples are retested at a lower dilution, there is correspondingly more of the interferent present which moderately suppresses the results at the lower dilution compared to those generated at the standard dilution. The effect can also be seen when samples are repeated at a higher dilution. In this case there is less interferent than at the standard dilution and so the results will be slightly elevated. The size of this range is approximately 14 mg/L between values of 103-117mg/L for Lambda and 62-78mg/L for Kappa. We have identified a resolution to this issue which is currently being validated. Notice will be given upon completion of this work.

Although the effect described above will not lead to a misdiagnosis, it may be confusing if the ratio alone is used to monitor patients. Previous advice has been to ensure that when monitoring patients, clinicians should be made aware of the absolute value of each light chain as well as the kappa/lambda ratio. Recent reports have observed that the use of the kappa/lambda ratio alone to monitor disease burden can become variable when the concentration of the non-tumour light chain is significantly suppressed due to tumour growth and it has been proposed that a value produced by subtracting the concentration of the non-tumor light chain from that of the tumour light chain is used (Kumar *et al*; Rajkumar & Kyle).

This approach has now been included in a recent publication “International uniform response criteria for multiple myeloma” by Durie *et al.*, where the criteria for Partial Response are defined as “an equal to or greater than 50% decrease in the difference between involved and uninvolved FLC levels”.

Similarly Progressive Disease is defined as “an absolute increase in the difference between the involved and uninvolved FLC of greater than or equal to 10mg/dl (100mg/L)”

This approach will negate the gap; however the free light chain ratio should still be used alongside immunofixation to determine whether a patient has complete serological remission.

We hope this information is useful and that you will forward it to your colleagues and ordering physicians. If you would like a reprint of the “International uniform response criteria for multiple myeloma”, please contact us.

---

### *Refs:*

Kumar S, Gertz M A, Hayman S R, Lacy M Q; Abs#3479 Blood 106, No.11.Nov. 2005. “Use of the serum free light chain assay in assessment of response to therapy in multiple myeloma: Validation of recent proposed response criteria in a prospective clinical trial of Lenalidomide plus dexamethasone for newly diagnosed multiple myeloma”

Rajkumar S V & Kyle R A. Best Practice and Research Clinical Hematology; 18 No.4 pp585-601, 2005. “Conventional therapy and approach to management”.

Durie ,B G M *et al.*, Leukemia, 20 (9) pp1467-73, 2006. “International uniform response criteria for multiple myeloma”.