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Modification of the o-cresolphthalein complexone method by improving stability of reagents for determination of serum total calcium

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Objective: Measurement of total calcium level in serum plays a main role in the diagnosis of many diseases such as osteomalacia, primary hyperparathyroidism and bone metastasis of carcinoma. Commonly used WHO recommended o-cresolphthalein complexone method has some disadvantages such as poor reagent stability, inconvenience in reagent preparation and higher reagent wastage. Therefore this study was performed to develop a new method to measure the total serum calcium by avoiding the weaknesses of the currently employed method.

Methods: A comparative study was performed using in-ward adult patient's serum samples (n=100) received at the Department of Chemical Pathology, National Hospital, Sri Lanka for calcium analysis. They were analyzed by using 4 methods namely; developed method, validated kit method, WHO method and WHO (2000) method.

Results: The developed method exhibited linear results of calcium concentration from 2.5 to 15 mg/dl. No significant change in reagent performance over 60 days from preparation was observed. Recovery range was very high in the developed method. The results of the developed method correlated well with the WHO method and other two methods.

Conclusion: It was concluded that the developed method for the serum calcium analysis benefits over currently used methods in the Medical Laboratory practice due to the stability of the reagent performance.