Comparative Analysis of Urinary Total Proteins by 3% Sulfosalicylic Acid Method and Pyrogallol Red Dye Binding Method

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Measurement of urinary proteins in peripheral laboratories is costly, and it requires sophisticated methods if done by Pyrogallol Red Dye Binding method. A simple low cost method would be beneficial in peripheral laboratories where there are no advanced methods to quantify urinary proteins. The aim of this study is to determine the accuracy of modified 3 % sulfosalicylic acid (SSA) method in quantitative measurement of urinary proteins compared to gold standard Pyrogallol Red Dye Binding method. A laboratory based study was carried out to quantify urinary proteins by modified 3% SSA method in freshly passed spot urine samples (n = 73) received to Chemical Pathology Laboratory of Medical Research Institute. The protein concentration of each sample was obtained by standard curve prepared by modified 3 % SSA method at the same date of sample collection, and the sample were duplicated. The results were compared with the gold standard Pyrogallol Red Dye Binding method. The maximum absorbance was observed in 360 nm. There was no significant difference between the protein values obtained by using modified SSA method (40.5 ± 67.9, 3.4-421.3 mg/dL) and Pyrogallol Red Dye Binding method (41.2 ± 78.2, 6.8- 436.3 mg/dL). A significant positive correlation (r = 0.75) was observed between 3 % SSA and PRDB methods. However, the mean difference of Bland and Altman curve indicated that there is a proportional bias ($p < 0.05$) in the concentration of protein in two methods. Therefore, 3 % SSA method overestimates (40 %) urinary protein concentration and cannot be used as a primary quantification method of urinary protein.

Keywords: Urinary protein, Sulfosalicylic acid, Pyrogalol red dye