COMPARISON OF DIPSTICK AND MANUAL METHODS FOR URINE PH, SUGAR AND PROTEIN IN PATIENTS ATTENDING OUT-PATIENT DEPARTMENT LABORATORY, TEACHING HOSPITAL, JAFFNA, SRI LANKA

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Dipstick urinalysis, a rapid diagnostic method is routinely used in clinical laboratories needs preserved samples to provide accurate results when test is not performed by two hours. This study compared dipstick urinalysis with manual method and identified the effects of storage on urine pH, sugar and protein in an experimental and completely randomized study. Randomization was used to store urine samples in different storage times and temperatures. Ninety-six mid-stream urine samples in aliquots were stored at room temperature for 6 hours and 2-8°C for 6 and 24 hours to test urine pH, glucose and protein. The manual methods for urine pH, glucose and protein were pH meter, Benedict's test and turbidimetry respectively. Dipstick A, B and C showed statistically significant difference ($p<0.01$) when compared with manual method for urine pH. The sensitivity, specificity, positive and negative predictive values of dipstick A for the detection of glucose were 77.8%, 100%, 100%, and 95.12% and for protein were 81.81%, 100%, 100% and 91.30% respectively. No significant differences between three dipsticks were found on urine glucose and protein measurement. Statistically significant increases were observed when samples stored at room temperature for 6 hours ($p<0.01$) and at 2-8°C for 24 hours ($p<0.01$). The changes were not detected by dipstick (A) technique. Little effect on urine sugar was found after storage at room temperature for 6 hours and at 2-80C for 24 hours in both methods ($p>0.01$). Urine protein was preserved up to 6 hours at 2-8°C ($p>0.01$). Significant increases were obtained on samples stored at room temperature ($p<0.01$). There was a risk of false positive results for protein tested using dipstick 'A' on stored samples. From this study, dipstick A, B and C have a good diagnostic value for urine sugar and protein and it is best to test on fresh urine sample. If there is an unavoidable delay it should be stored at refrigerator at 2-8°Cfor 6 hours.

Keywords: Urine dipstick, Storage, Urine sugar and protein