Comparisons of Automated Urine Analysis System- Arkray Aution Max/Sysmex UF1000i, IRIS iChem Velocity/iQ200 and Bayer Clinitek Atlas/Manual Microscopic Particle Counting

Ya-Fen Chen, Hung-Yen Lin, Yun-Jen Chen, Yung-Luen Shih, Tong-Jong Chen
Department of Pathology and Laboratory Medicine, Shin Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan

Objective: Urine samples can be collected non-invasively and conveniently. For this reason, they are one of the most frequently used clinical laboratory tests. A correct urinalysis result can offer patients to screen for diseases of the kidney and urinary tract such as metabolic, hemolytic and infectious diseases. Using a machine to automatically read a urine chemistry reagent-strip can eliminate the individual variability and the time-to-read error by visual interpretation. Traditionally, urine sediment can be further analyzed by manual microscopic after urine centrifugation, but the microscopic examination of urine sediment structures is a time-consuming procedure, requiring expert knowledge. Besides, the manual microscopic analysis is interpreted respectively by technicians. We compared two automated urine sediment analyzers with manual microscopic analysis to improve the quality and speed of urine sediment tests and to reduce the workload of microscopic examination.

300 specimens were collected and analyzed by Arkray Aution Max/Sysmex UF1000i(Sysmex, Kobe, Japan), IRIS iChem Velocity/iQ200 (IRIS International, Inc., Chatsworth, CA, USA) and Bayer Clinitek Atlas/Manual microscopy. The results indicated that the three analyzers Arkray Aution Max, IRIS iChem Velocity and Bayer Clinitek Atlas showed good correlation. And the two analyzers UF-1000i and iQ200 showed good linearity of RBC and WBC. The Correlations between these two analyzers and manual microscopy illustrated high concordance rate of RBC, WBC, EC, Bacteria, Mucus and Sperm. The UF-1000i can only offer the quantification of crystals and casts but it cannot classify the components of the two items. Therefore, to identify crystals and casts require confirmation by microscopic review.

Key words: Urinalysis, automated urine examination, Comparison