Simple sequential injection analysis system for rapid determination of microalbuminuria

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Abstract: A simple, specific and sensitive sequential injection analysis (SIA) system based on non-immunoassay fluorescent detection has been developed for the determination of urinary albumin. The specific binding of the dye Albumin Blue 580 (AB 580) to albumin in urine generated high emission fluorescent signals. The excitation and emission wavelengths were set at 590 and 610 nm, respectively. The analytical range was obtained from I to 100 mg L(-1), with a detection limit of 0.3 mg L(-1) (S/N = 3). The SIA system gave high precision with relative standard deviations (R.S.D.s) of 0.9% and 1.4% when evaluated with 15 and 100 mg L(-1) albumin (n = 15), respectively. The method exhibited good reproducibility, as assessed by performing four analytical curves on different days, and intra-run CVs (2.3-3.3%) and inter-run CVs (3.8%) were obtained. Rapid operation was achieved with a sample throughput of 37 h(-1). This method was successfully applied to the determination of urinary albumin, and the method was highly correlated with the immunoturbidimetric method (r(2) = 0.965; n = 72).

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