DEVELOPMENT OF A NOVEL STRATEGY FOR RAPID DETECTION OF HUMAN SERUM ALBUMIN PSEUDOESTERASE ACTIVITY: A STEP TOWARDS A NOVEL POINT OF CARE SCREENING FOR MICROALBUMINURIA

Microalbuminuria detection is a commonly performed parameter in a clinical biochemistry laboratory. Immunochemical methods are popular for such detection, but such methods lack sensitivity. It does not sense the immune unreactive albumin fragments excreted in the urine. Further, the dye-based methods of albumin detection are not specific for human serum albumin (HSA). It senses other proteins as well that are often excreted in the urine. It is in this context it was felt that novel strategies have to be innovated for microalbuminuria detection. It is known that HSA has a slow turnover esterase activity. It was hypothesized that exploring this unique property of HSA, a novel strategy of microalbuminuria can be developed. The study was divided in in-silico, in-vitro and in-clinical phase. It was observed that 2-Naphthyl acetate (2NA) behaves as a relevant substrate for HSA activity detection. Further, it was observed that neostigmine does not inhibit pseudoesterse activity of HSA. Based on the above inventions, a method was innovated for sensing albumin in human urine. We believe that the innovations recorded here will pave the path of novel microalbuminuria detection system at the point of care in days to come.