

# Diagnostic Proteomic Biomarkers to detect Kidney Diseases

S-06.3-1

T. Ozben<sup>I</sup>, E. Bellei<sup>II</sup>, E. Monari<sup>II</sup>, S. Bergamini<sup>II</sup>, L.A. Pini<sup>III</sup>, A. Tomasi<sup>II</sup>

<sup>I</sup>Akdeniz University, Antalya, Türkiye, <sup>II</sup>Department of Diagnostic Medicine, Clinic and Public Health, University of Modena and Reggio Emilia, MODENA, Italy,

<sup>III</sup>Headache and Drug Abuse Study Center, University Hospital of Modena and Reggio Emilia, MODENA, Italy

Urinary proteomics is primarily applied to the study of renal and urogenital tract disorders. Here are reported two distinct successful examples of this approach for the discovery of early urinary biomarkers of kidney-related dysfunctions: diabetic nephropathy (DN), a well-known complication of diabetes frequently leading to dialysis, and drug-induced nephrotoxicity, a possible condition caused by medication-overuse headache (MOH). Early detection of kidney disorders based on selective biomarkers could permit to diagnose patients at the initial stage of the disease, where the therapy is still possible to stop or prevent occurrence of advance disease. Urine samples were first concentrated and desalted. Subsequently, they were subjected to two-dimensional gel electrophoresis (2-DE) coupled to mass spectrometry (MS) for protein identification. Furthermore, some proteins were verified by Western blot and ELISA test. In diabetes-related study, 11 differentially expressed proteins were detected (8 up-regulated and 3 down-regulated) in type 2 diabetic (T2D) and T2DN patients compared to the healthy control subjects. In MOH study, a total of 21 over-excreted proteins was revealed in urine of non-steroidal anti-inflammatory drugs (NSAIDs) and mixtures abusers vs controls. Particularly, 4 proteins were positively validated by immunoblotting and ELISA. Urinary proteomics allows non-invasive assessment of renal diseases at an early stage by the identification of characteristic protein pattern.