Application of SELDI-TOF in N-glycopeptides profiling of the urine from patients with endometrial, ovarian and cervical cancer

ABSTRACT

Purpose: Endometrial (ECa), ovarian (OCa) and cervical (CCa) cancers are among 10 of the most common cancers affecting women worldwide. Cancers are known to cause some proteins to be differentially glycosylated or aberrantly excreted in the urine, which can be used as biomarkers. Since ECa, OCa and CCa are difficult to diagnose at the early stage, the aim of the present study was to identify a panel of new biomarkers for early detection of the cancers using surface-enhanced laser desorption/ionization-time-of-flight (SELDI-TOF) technology. Identification of early biomarkers that are specific and efficient can increase the survival rate of the patients. Experimental design: Digested urinary proteins from patients with ECa, OCa and CCa were incubated on the champedak mannose-binding (CMB) lectin-immobilized PS10 chip. The lectin-captured glycopeptides were detected with SELDI-TOF mass spectrometry and followed by biomarker wizard analysis. Results: Peaks m/z 1201 and 1449 were detected as potential group discriminators. The peak m/z 1201 could distinguish OCa from CCa and ECa and its sensitivity and specificity were 100%. For m/z 1449, it was able to differentiate ECa from the other two types of cancer. Conclusions: The findings of this study suggest urinary glycopeptides m/z 1201 and 1449 may serve as potential biomarkers for the early detection of ECa, OCa and CCa, although this requires further extensive validation on clinically representative populations.