

## Abstract

Hepcidin is cysteine-rich cationic peptide produced by hepatocytes, secreted into blood plasma, and excreted in urine. Hepcidin is proposed to be the key regulator of iron metabolism and an evaluation of changes in the hepcidin level is important for diagnosis of several diseases. However, methods used for the hepcidin detection and determination in urine and serum have certain limitations. At present time MALDI-TOF MS based approaches have been applied for final analysis of urinary and/or serum hepcidin levels. Before MS analysis, separation of hepcidin from analyzed samples is an important and necessary step.

The aim of this study was to compare the ability of several magnetic sorbents with different coating matrix and/or different terminal functionalized groups to adsorb hepcidin prior MS analysis. Either commercial magnetic sorbents containing  $-\text{COOH}$  groups or magnetic hydrophilic IDA-modified polymethacrylate microparticles P(HEMA-co-GMA)-IDA with immobilized metal ions were used for this purpose. Hepcidin was adsorbed to magnetic sorbents containing linked carboxyl groups (i.e. to weak cation exchange magnetic particles) at pH 6.8 independently on a nature of magnetic particle coating layer. Magnetic particles P(HEMA-co-GMA)-IDA with immobilized Cu(II) ions were found to adsorb hepcidin in a wide region of pH, while in the case of immobilized Co(II), Zn(II) and Fe(III) ions the peptide adsorption was observed only in acidic pH.

Obtained results have shown, that found optimized condition for the adsorption of hepcidin standard to different magnetic sorbents can be applied for the peptide adsorption from samples of human urine.