ASYMMETRIC DIMETHYLARGININE - COMPARSION OF CHROMATOGRAPHY AND IMMUNOMETRIC METHODS

Objective:Asymmetric dimethylarginine (ADMA) is often discussed in connection with hyperhomocysteinemia and its toxic effect on vessel wall. ADMA concentration is usually measured by HPLC (High Performance Liquid Chromatography) after previous derivatisation. Recently, ELISA (Enzym Linked Immuno Assay) methods for ADMA determination were introduced and ELISA kits are commercially available.
Method and Result:The aim of the study was to compare HPLC and ELISA methods for ADMA determination. For HPLC determination we used equipments from Thermo separation product (Florida, USA). After solid-phase extraction on polymer cation-exchange column and the following derivatisation with o-phthaldialdehyde the samples were separated using C18 column (mobile phase 8.7% acetonitril, 50 mmol/l phosphate buffer, pH 6.5) and a fluorescence detector. NG-monomethyl-L-arginine was used as an internal standard. ADMA® ELISA kit, based on a competitive principle, was obtained from DLD Diagnostika, Hamburg, Germany. ADMA was measured in EDTA plasma of 40 healthy blood donors and 40 hemodialysis patients with hyperhomocysteinemia.
Conclusion: In spite of different principles both methods showed a very good correlation ($r = 0.944$, $p<0.0001$). ELISA method reproducibility, calculated from 40 duplicate measurements of hyperhomocysteinemic samples and expressed as variation coefficient, was 4.75%. These results show that time consuming HPLC method of ADMA determination can be replaced by ELISA which gives comparable results and has an excellent reproducibility.