Determination of urinary catecholamines with capillary electrophoresis after solid-phase extraction

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„...functionalities were based on predictions of the Pallas 1.2 program (**CompuDrug** Chemistry, Budapest, Hungary). 3 Results and discussion 3...metabolites form glucose and sulfate conjugates in cellular **metabolism**. With no commercial reference compounds available for these..."

Abstract

The stabilities of 3,4-dihydroxybenzylamine (DHBA), dopamine, 3-methoxytyramine, normetanephrine and metanephrine standards under acid, base and enzymatic hydrolysis conditions were studied. Basic incubation media were not suitable for 3,4-dihydroxy compounds, but acid and enzymatic hydrolysis conditions were applicable to all the compounds. The results of acid and enzymatic hydrolysis were comparable and the enzymatic hydrolysis was applied to a urine matrix. A method including solid-phase extraction (SPE) with a copolymer sorbent was developed for purification of the urine samples. Due to poor recovery of DHBA, the most frequently used internal standard in catecholamine analysis, this compound was replaced with the 3-*O*-methoxy structure. The recoveries of the compounds in spiked urine samples in SPE were between 96.4 and 124.4%. The repeatability of the combination of enzymatic hydrolysis and SPE pretreatment was good for all the compounds, except for dopamine and 3-methoxytyramine due to some matrix compounds still interfering with the separation. The analyses were performed with capillary electrophoresis in an ammonium acetate buffer with UV detection. The validation data for the compounds including limit of detection, limit of quantification, linearity and repeatability of the method are presented.

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