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Extended Abstract

Simultaneous analysis of doping drugs in human plasma and urine using HPLC-DAD and HPLCESI- MS

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Abstract

Two liquid chromatographic methods have been developed for determination of doping drugs in spiked plasma and urine. The first method, HPLC-DAD (diode array detector) is used for simultaneous separation and quantitation of AMI (amiloride), TOR (torasemide), FUR (furosemide) and IDP (indapamide). It is also used for simultaneous separation and quantitation of ATE (atenolol), caffeine and FUR. They are applied in spiked plasma samples. However, ATE could not be determined quantitatively due to interference with plasma. LODs were found to be 0.16, 0.15, 0.11, 0.12 and 0.25 for AMI, TOR, FUR, IDP and caffeine, respectively. LOQs were found to be 0.49, 0.45, 0.33, 0.36 and 0.75 for AMI, TOR, FUR, IDP and caffeine, respectively. The second method, HPLC-ESI-MS (electrospray ionization-mass spectrometry) has been developed for the routine detection of doping drugs in spiked urine samples. It requires only one injection per sample and is currently capable to detect 10 doping drugs, including six diuretics- FUR, AMI, TOR, hydrochlorothiazide (HCTZ), IDP and spironolactone (SPIRO), two stimulants-caffeine and phenylephrine (PHE) and two β blockers- ATE and bisoprolol in a running time of 14.5 minutes. Both positive and negative ionization modes were used depending on the structure of the separated compounds. The linearity range for most of the drugs was 10-1000 ngmL-1. All parent compounds can be detected at urinary concentrations significantly below 50 ngmL-1.The methods developed simple pretreatment procedure, protein precipitation by acetonitrile and direct dilution for spiked plasma and urine, respectively.

Biography

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