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Quantitative estimation of alcohol marker ethylglucuronide (EtG) in human hair by LC-MS/MS: Application towards doping control & forensic science

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Hair testing is advantageous as compared to other complementary matrices like urine or blood, due to both longer detection window, non invasive, and easy storage conditions. Ethyl glucuronide (EtG) is a promising biomarker for identification of alcohol abuse in doping control or forensic analysis. An analytical method for determination of EtG in human hair using liquid chromatography–tandem mass spectrometry (LC–MS/MS) is developed. The best separation was achieved using a C-18 column and a mobile phase comprising of 0.1% formic acid: acetonitrile in a gradient mode, with flow rate and temperature being 0.6 ml/min and 30°C, respectively. The run time of the developed method is 6 minutes. The developed method was validated and LOD (3pg/mg), LOQ (10 pg/mg) and linearity (10-200 pg/mg) was established. The coefficients of variation in intra- and inter-assay precision were always lower than 15%. The method was successfully applied and qualified for the quantitative determination of EtG on proficiency test (PT) samples receives from Society of Hair Testing (SoHT). The extension of this work would be on the differentiation of results of EtG analysis in hair due to such confounding factors.

Biography

Kapendra Sahu has completed his PhD at Jamia Hamdard University (India). He is Scientist B of a research team focusing on Anti-Doping Science & Hair Testing at National Dope Testing Laboratory, New Delhi. He has published more than 28 papers in reputed journals and serving as an Editorial Board Member of repute.

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