# Determination of Benzatropine in Hair by GC/MS after Liquid-Liquid Extraction (LLE)

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**Abstract :** Benzatropine (benztropine) is used to treat symptoms of Parkinson's disease or involuntary movements due to the side effects of certain psychiatric drugs. We report in this study, results of a procedure for the determination of benzatropine in hair using LLE, once with methanol and second with phosphate buffer (pH 6.0), followed by filtration and then re-extraction with dichloromethane. A GC/MS method was developed and validated for this determination using selected ion monitoring (SIM) detection without derivatization. Linearity established over the concentration range 0.1-20.0 ng/mg hair, and the correlation coefficients were greater than 0.99. Recoveries were 52.2% and 21.1% using methanol and phosphate buffer extraction, respectively. Detection limits of benzatropine in hair were between 0.65 and 3.0 ng/mg hair, while the accuracy were 10.4% and 18.5% (RSD), respectively. We also applied this method to the analysis of soaked hair samples and demonstrated that the LLE using methanol meets the requirement for the analysis of benzatropine in hair.
**Keywords :** hair analysis, benzatropine, liquid-liquid extraction, GC/MS
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