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## **Detection of urinary metabolites of AM-2201 and UR-144, novel synthetic cannabinoids**

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### **Abstract**

Synthetic cannabinoids are the psychotropic compounds frequently identified as active components of smoking mixtures easily available via the Internet in several countries. These herbal blends have become extremely popular as a legal alternative to the cannabis-based products and are difficult to detect by regular drug tests.

We studied an *in vitro* and *in vivo* metabolism of AM-2201, 1-[(5-fluoropentyl)-1H-indol-3-yl]-(naphthalen-1-yl)methanone, and UR-144 (KM-X1), (1-pentylindol-3-yl)-(2,2,3,3-tetramethylcyclopropyl)methanone, isolated using preparative liquid chromatography from the smoking mixtures sold in Russia. After incubation with human liver microsomes (HLM) as well as with cytochrome isoenzymes 3A4 and 2B6, the metabolic pathways were identified by means of liquid chromatography - triple quadrupole and high resolution mass spectrometry with electrospray ionization in positive mode. It was found that the *in vitro* reactions include mono- and dihydroxylation, loss of *N*-alkyl side chain and formation of dihydrodiol metabolites in case of AM-2201. The forensic urine samples were then analyzed to validate the *in vitro* data. There was good agreement between the *in vitro* and *in vivo* findings, thus demonstrating the importance and applicability of simulated metabolic reactions with HLM when the new cannabimimetics need to be implemented into the existing analytical methods. Both compounds are subject to extensive metabolism which mainly includes hydroxylation followed by conjugation with glucuronic acid. The monohydroxy metabolites were shown to be the most valuable for doping control analysis due to their relatively high abundance and ease of detection in post administration urine samples.

For the complete paper, please refer to:

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