Letter to the Editor

Evaluation of the Rapidrog Cannabis Noninstrumental Immunoassay

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Procedures designed to detect cannabis use by analyzing urine samples for the presence of 11-nor-Δ^9-tetrahydrocannabinol-9-carboxylic acid (THCCOOH) are well-documented. The traditional approach is to screen urine by immunoassay and submit the presumptive positive samples for confirmation by gas chromatography–mass spectrometry (GC–MS). Several commercial instrumental and noninstrumental immunoassays are available on the market. Recently, new regulations in Europe concerning driving under the influence of drugs have increased manufacturers' interest in proposing simple and single noninstrumental immunoassays. To document the usefulness of the RapiTest THC (Princeton Biomeditech Corporation, Princeton, NJ), which is marketed in France under the trade name Rapidrog Cannabis (J2L Diffusion, Labarthe Inard, France), 92 urine samples obtained from a detoxification center were simultaneously tested by this immunoassay, fluorescence polarization immunoassay (FPIA), and GC–MS. The Rapidrog Cannabis test is based on the principle of detecting drugs by an immunochromatographic reaction, or CICA (colored immuno chromatography assay). The urine sample flows through a membrane by capillary action. The dye conjugate complex on the test membrane and the drug present in the urine compete for the antibody present on the test membrane. In the absence of the drug, the antibody is free to react with the dye conjugate, and a colored band appears in the test window. A control band is included with the test to confirm validity. The positive cutoff value is fixed at 50 ng/mL of THCCOOH (1).

The result is obtained 3 min after pipetting five drops of urine into the test sample cavity. If the test is positive, only one band will appear; if the test is negative, two bands will appear.

Table I. Method Comparison for Rapidrog, FPIA, and GC–MS

Method	Number of positives	Number of negatives
GC–MS	54	38
Rapidrog	52	40
FPIA	54	38

FPIA and GC–MS analyses were achieved according a previous paper (2) with 25 and 15 ng/mL of THCCOOH as positive cutoffs, respectively.

Results are presented in Table I. When using the GC–MS cutoff of 15 ng/mL, 54 of the 92 samples were positive, and the concentrations ranged from 15 to 306 ng/mL.

No false-positive or false-negative results were observed with FPIA. Two false negatives were observed with the Rapidrog test. In one case, in which the THCCOOH concentration was determined to be 81 ng/mL by GC–MS, a pink, diffusive color appeared throughout the lecture cell. In the second case, the GC–MS concentration of THCCOOH was 27 ng/mL. Analyses with the Rapidrog were rapid and easy to perform; however, the color intensity of the test can sometimes be problematic. If the color band is faint, it is difficult, especially for inexperienced user, to know if the result indicates the presence of the drug. This was also observed in the first studies of the test (3,4).

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