

FALSE BENZODIAZEPINES RESULTS IN A RAPID IMMUNOCHROMATOGRAPHY TEST FOR URINARY DRUG DETECTION IN TOBACCO SMOKERS

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Background: This study aimed to evaluate the interference of tobacco smoke on immunochromatography assay for urinary benzodiazepines detection and the interest of two biological markers and smoking status parameters as predictive factors of false results.

Methods: Our study included 256 voluntary subjects (143 passive smokers and 113 smokers). Cotinine was measured by homogenous immunoenzymatic assay and SCN⁻ by selective electrode. Urinary drugs were detected by immunochromatographic assay. A positive result is completed by an analytical method with an immunometric assay.

Results: False positive results for benzodiazepines are significantly more frequent in smokers compared with passive smokers (90.2% Vs 22.4%, $p < 10^{-3}$). For smokers, the number of cigarettes was significantly higher in subjects with falsely positive results for benzodiazepines compared with subjects with negative results (32 ± 11 Vs 20 ± 10 ; $p = 0.04$). Between these two groups, we established a significant difference for urinary cotinine (345 ± 211 Vs 117 ± 54 $\mu\text{g}/\mu\text{mol}$; $p < 10^{-3}$) and for plasma SCN⁻ (101.6 ± 3.4 Vs 98.8 ± 2.1 $\mu\text{mol}/\text{L}$; $p = 10^{-3}$). Urinary cotinine and consumption duration present the highest values of AUC of the ROC curves. The cut-off of 167.6 $\mu\text{g}/\mu\text{mol}$ and 10.5 years were found as predictive factors of false positive Results.

Conclusions: Tobacco smoke interferes with immunochromatographic assay of urinary drug detection; therefore, all subjects must be questioned about their smoking status to avoid such false results during results interpretation.