SPATIAL DISTRIBUTION OF ABUSE DRUGS IN HUMID AREAS

VICENTE ANDREU[1], PABLO VAZQUEZ-ROIG[2], CRISTINA BLASCO[3], YOLANDA PICÓ[3]*

[1]*Desertification Research Center-CSIC, Albal, 46007, Spain*
[2]*Faculty of Pharmacy. Univ. of Valencia, Burjassot, 46100, Spain*
[3]*Faculty of Pharmacy. Univ. Valencia, Burjassot, 46100, Spain*
yolanda.pico@uv.es

The presence of abuse drugs in surface waters of rivers, lakes, marsh, etc are indicatives of human activity, and may denote a lack in the purification of urban wastewaters. In some cases, found levels of these substances can be used for estimation of the population´s consume. Drugs of abuse are excreted mainly as metabolites through human waste, and only traces or small quantities can be found unaltered in soils and waters. Due to the limited number of research studies in this field, there is scarce understanding of the environmental occurrence, transport and fate for these compounds and it is also not known the effects of the permanent exposure of aquatic organisms to these toxics. Coastal marshes are one of the most important Mediterranean type ecosystems, which have suffered during the last decades an important demotion due to the intensification of agriculture and the construction of infrastructures. Pego-Oliva marsh is a good example of that. For this reason we selected this area, of approx. 1,290 ha, to assess the levels of drugs of abuse through the analysis of twenty-three water samples taken in this wetland. A previously developed analytical method for the simultaneous determination of 14 drugs of abuse and their metabolites in surface waters, using solid-phase extraction (SPE) and liquid chromatography tandem mass spectrometry (LC-MS/MS) was utilized. Several isotope-labelled internal standards were included in the method as a way to compensate the matrix effects, for a better quantification. Ectasy, amphetamine, metamphetamine, MDA, ketamine, THC-COOH (the main metabolite of the THC), cocaine and their main metabolites (benzoylecgonine and ecgonine methyl ester), methadone, morphine and 6-acetylmorphine were found at concentrations in the range of 0.2 ng/L until 20.4 µg/L. It was impossible to establish an origin of the drugs or the levels of consumption in the population of the surrounding areas due to that the marsh receive waters from different sources like Gallinera, Molineel, Bullent and Racons rivers, which could bring contaminated waters from long distances, as well as the presence of springs.

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