

Poster Presentation

Identification of pharmaceuticals in wastewater by LC-ESI-MS/MS

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Studies of the last decades have reported the presence of pharmaceuticals residues in surface waters and effluents of Sewage Treatment Plants (STPs), indicating that many of these compounds are not removed by various conventional "clean up" processes of water treatment plans [1, 2]. Therefore, surface water and drinking water may be negatively impacted by direct discharge of sewage and effluents from STPs. The purpose of this study is present a multi residue analysis for screening and confirmation of 35 pharmaceutical compounds at CNEN- IPEN/USP wastewater. The analytical tool used for sample analysis was the high-performance liquid chromatography (reversed-phase) couple with electrospray source (positive mode) and a hybrid triple quadrupole linear ion trap mass spectrometry (LC-ESI-QqLIT). These 35 compounds include analgesics, β -blockers, antihypertensive, antidepressant, anxiolytic, antianginal, diuretic, anticholenteremic, antipsychotic, anticonvulsant, antihistaminic, stimulant, anesthetic, metabolite, appetite suppressant, antiuserative and contraceptive. The analyzed samples were volume composed by collection of five days, Monday through Friday, from Marh to October of 2011. Before injection, the samples were only filtered (0.45 μ m). The instrumental quantification limit (IQL) varied between 5 and 150 pg on-column, and the limits of quantifications (LOQ) were in the low ng/mL range. Six pharmaceuticals were detected above LOQ: acetaminophen, caffeine, valsartan, losatan, midazolam and atenolol. The most abundant compounds were Acetaminophen (22 – 230ng/mL) and caffeine (115 – 985ng/mL). Despite finding concentration of 3.4 to 2230ng/mL for midazolam, was found only one point of highest concentration and average concentration of 40ng/mL. The present analytical method was useful to check for pharmaceuticals in wastewater and identify the most abundant compounds to support management/monitoring programs.

References:

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