

Occurrence of Antibiotics of Veterinary Use in Water of the Lake Titicaca: Its Environmental Implication and Human Health

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Abstract : The production of rainbow trout in the Lake Titicaca represents an important economic activity for Peru. The city of Puno is responsible for 83% of this production, so the use of antibiotics within the aquaculture system is not alien to this reality. Meanwhile, the waters of Lake Titicaca represent an important source for the supply of drinking water for 80% of the population of the Puno city. In this paper, twelve antibiotics for veterinary use were monitored in water samples during two seasons: dry (July 2015) and rainy (February 2016), water samples from trout production systems, near the water catching point in the lake and drinking water in the city house of Puno were considered. The samples were analyzed using liquid chromatography coupled to mass spectrometry and solid online phase extraction (On-line SPE-LC-MS/MS), all samples analyzed showed concentrations of Ciprofloxacin up to 65.2 ng L⁻¹ at the rainy season. On the other hand, 63% of water samples from the dry season and 36 % from the rainy season showed Chlortetracycline up to 8.7 and 6.1 ng L⁻¹, respectively. The presence of residues of veterinary antibiotics in drinking water means a serious health risk for 80% of the population of Puno since all these people are supplied from this source.

Keywords : chromatography, DNA damage, environmental risk, water pollution

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