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Ecotoxicological evaluation and occurrence of losartan potassium and valsartan in a Brazilian coastal zone

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Special attention has been given to environmental contamination related to pharmaceuticals compounds because these pollutants, so-called emerging, may represent biological-ecological risk, especially in aquatic ecosystems. Antihypertensive drugs are used worldwide with evidence of their occurrence in environmental matrices and domestic effluents. This study aimed to investigate the occurrence of Losartan and Valsartan in a Brazilian coastal zone and also evaluated their adverse biological effects on sea urchin *Lytechinus variegatus*. Seawater samples were collected from six points surrounding the submarine outfall of Santos (Sao Paulo, Brazil) and the samples were analyzed by LC/MS/MS. The analysis revealed the presence of both Losartan and Valsartan with concentrations up to 0.024 µg.L⁻¹. Acute toxicity assays were conducted according to U.S. Environmental Protection Agency protocol. Both Losartan and Valsartan exhibited IC₅₀ above 100 mg.L⁻¹ and these results classify these pharmaceuticals as Non Toxic according to directive 93/67/EEC, which classifies substances according to specific toxicity results. Chronic toxicity assays were performed according to Brazilian National Standards Organization protocol. Losartan exhibited values of NOEC (No Observed Effect Concentration) of 50 mg.L⁻¹ and CEO (Concentration Effect Observed) of 70 mg.L⁻¹. The results of NOEC and CEO for Valsartan were 9.37 mg.L⁻¹ and 18.75 mg.L⁻¹, respectively. Differences of NOEC and CEO values for Losartan and Valsartan may be explained by the differences of K_{ow} (octanol-water partition coefficient) values for these two molecules. Despite the occurrence of Losartan and Valsartan in seawater samples, it's unlikely the occurrence of ecotoxicological effects, considering the environmental concentrations detected for these pharmaceuticals.

Biography

Luciana Lopes Guimaraes has completed her PhD from Federal University of Sao Paulo (Brazil) and Post-doctoral studies from the same Institution. She is an Adjunct Professor at Santa Cecilia University (Brazil). She has published papers in reputed journals and has been serving as a Reviewer for *Frontiers in Physiology*, *Frontiers in Microbiology* and also for *Medicine* (Baltimore).

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