

organisms are still unknown. In this therapeutic class the losartan is the main drug described in Brazil. There are studies reporting considerable concentrations of losartan in aquatic environment ( $\mu\text{g L}^{-1}$ ) and in effluents it was already found in  $\text{mg L}^{-1}$  scale. Therefore losartan is a relevant example of emerging contaminant that needs to be analyzed under ecotoxicological aspects. Whereas those studies on adverse effects in different aquatic organisms are still insufficient the investigations on early parameters of ecotoxicity are of great biological importance. This study evaluated the influence of the losartan in biochemical and genetic biomarkers in species *Astyanax altiparanae*. The experiments were divided into two stages. First the organisms were exposed to unique losartan concentration ( $2.5 \text{ mg L}^{-1}$ ) at different exposition times 6, 12, 24 and 48 h. After that were tested two concentrations ( $0.25$  and  $2.5 \text{ mg L}^{-1}$ ) in exposure times of 24 and 96 h. In comet assay, reduced DNA damage scores were verified when compared to the control groups, especially at the exposure time of 12 h. This may suggest formation of crosslinks, which must be confirmed through specific analysis. The relation between time and observed effects couldn't be fully defined, however the results show that biomarkers tended to be affected from 12 hours of exposition. Losartan showed no change in acetylcholinesterase activity but the results indicated potential to induce oxidative stress on fish.

#### SP030 High efficient low cost carbon anodes on the electrochemical remediation of amoxicillin

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Among the emerging pollutants thrown off at the sewage systems, owing to the inherent persistence and lethality, the antibiotics deserves special attention. The amoxicillin (AMX) is a widely consumed antibiotic for treatment of bacterial infections in human and animals. Therefore, many studies have focused on the AMX environmental removal. Nevertheless, few treatment systems have proved to be efficient applicable in real scale. Thus, the aim of this work is the evaluation of  $\text{TiO}_2/\text{C}$  nanostructured anodes on the electrochemical remediation (ER) of AMX. The anodic efficiency of  $\text{TiO}_2/\text{C}$  was compared with unmodified conventional Titanium ( $\text{Ti}^{\text{II}}$ ) and Carbon graphite (C) electrodes. The experimental parameters included AMX concentration of  $12 \text{ mg/L}$ , current density of  $50 \text{ mA}$  and treatment regimen from 10 to 40 minutes under constant agitation. The electrolytic system consisted in tap water (TW),  $\text{Na}_2\text{SO}_4$  or NaCl solutions. The AMX decay was monitored by UV and mass spectrometry and differential pulse voltammetry, whereas the resulting toxicity of the treated assay solutions was checked by zebrafish (*Danio rerio*) embryo assay. As result the  $\text{TiO}_2/\text{C}$  anode presented the high efficiency, leading to the complete AMX removal in less than 10 minutes, when the medium was  $0.1 \text{ M NaCl}$ . Yet in tap water, in which the electrical conductivity is very low, the removal fell to 40%. The efficiency of the supported electrolytes was in the order of  $\text{NaCl} > \text{Na}_2\text{SO}_4 > \text{tap water}$ . In turn, the zebrafish assays showed toxicity decreasing for all treated assay samples, in comparison to AMX start solution. Therefore, it can conclude that the electro-oxidation of AMX at  $\text{TiO}_2/\text{C}$  anode may be a low cost and efficient treatment alternative for human consuming water.

#### SP031 Marine sediment contamination in a subtropical zone (Santos Bay, Brazil): Pharmaceuticals, personal care products and cocaine

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Although the continuous input of domestic sewage in coastal areas has been reported, few data are available about the presence of pharmaceuticals and personal care products (PPCPs) in coastal environments of South America. The aim of this study was to determine the environmental concentration of PPCPs and cocaine in sediments from Santos Bay (Brazil), a degraded coastal area due to urban and industrial pollution. A sediment sample, collected at five points around the Submarine Sewage Outfall of Santos, was analyzed by liquid chromatography-tandem mass spectrometry (LC-MS/MS) and 35 compounds were investigated. The presence of five pharmaceuticals (caffeine, carbamazepine, diclofenac, fluoxetine and ibuprofen), one personal care product (triclosan), and one illicit drug (cocaine) was evidenced. Considering the absence of information about the occurrence of PPCPs and illicit drugs in marine sediments of tropical and subtropical areas of South America, the data reported here

subsidize the assessment of environmental risks of such substances in coastal zones.

#### SP032 Modeling the dispersion of endocrine disruptors in the Santos Estuarine System (Sao Paulo State, Brazil)

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Estrogens are hormones responsible for growth and reproduction. They are naturally synthesized by animals and humans alike. Xenooestrogens are identical to natural hormones, but they are manmade and used as oral contraceptives. Xenooestrogens are a specific group of drugs found in domestic wastewater and some environmental matrices. These compounds remain after conventional sewage treatment and, consequently, affect both the environment and non-target aquatic organisms. In this study, we used the Delft3D hydrodynamic model to estimate the amount of both natural and synthetic estrogens that have been released in the Estuarine System of Santos and São Vicente and the Santos Bay. The data on flow from the sewage treatment plants and on average concentrations of natural and synthetic estrogens released in aquatic environments were obtained from the literature. The results of the modeling showed higher concentrations of estrogens in the estuarine waters of the Largo Pompeba region, the São Vicente Canal, and the Santos Bay, which are regions that receive greater inflows of domestic sewage. The results also suggest that higher concentrations of estrogenic compounds are expected to be found in areas with higher levels of salinity.

#### SP033 Multirresistência de E. coli a antibióticos: Avaliação da qualidade da água de reservatórios urbanos da Região Metropolitana de Curitiba Brasil

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O desenvolvimento urbano em conjunto com a falta de esgotamento sanitário geram riscos potenciais ao abastecimento de água da população em países em vias de desenvolvimento, sendo o mais crítico, a ocupação das áreas de contribuição de reservatórios de abastecimento urbano que, eutrofizados podem produzir riscos à saúde da população. Contribuições oriundas de criações de animais e também de esgoto doméstico hospedam micro-organismos diversificados, podendo apresentar resistência a diferentes antibióticos e atuar como disseminadores de genes de resistência. Neste contexto, o presente trabalho teve como objetivo diagnosticar a qualidade microbiológica da água de reservatórios urbanos da Região Metropolitana de Curitiba-Paraná, Brasil (reservatórios Passaúna e Piraquara II) quanto à presença de coliformes totais e termotolerantes, pela técnica do número mais provável (NMP/100 mL), bem como perfil de resistência de *Escherichia coli* a antibióticos. A pesquisa experimental envolveu a coleta de amostras de água superficial para análise de coliformes totais e termotolerantes, isolamento de *E. coli* e determinação de resistência a antibióticos, por meio do antibiograma e cálculo do índice de resistência (IRA). Os resultados mostraram valores de coliformes termotolerantes que variaram de  $< 1,8$  até  $540.000 \text{ NMP/100 mL}$  em ambos os reservatórios investigados. Com relação ao perfil de resistência, amostras coletadas nos dois reservatórios apresentaram *E. coli* multirresistente. No Passaúna, a multirresistência foi observada em 3 pontos de coleta, aos antibióticos polimixina B, ampicilina + sulbactam, cefotaxima, piperacilina + tazobactam, ampicilina, cefazolina, gentamicina, tetraciclina, imipenem e sulfazotrim. No Piraquara II, foi observada multirresistência em 2 pontos de amostragem, de cujas cepas isoladas apresentaram resistência a polimixina B, imipenem, tetraciclina, ceftazidima, cefepima e cefazolina. Os resultados do IRA total para os dois reservatórios apresentaram valores que variaram de 0 a 0,066, que apesar de baixos, sugerem que as áreas analisadas precisam estar em constante observação, tendo em vista a possibilidade de expansão populacional causando maior probabilidade das cepas se tornarem multirresistentes.

#### SP034 Poultry litter as a source of fluoroquinolone antibiotics in agricultural soils from Rio de Janeiro

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The use of poultry litter as fertilizer in agricultural areas is an important source of veterinary antibiotics to environment. The presence of antibiotics in soils can affect biogeochemical cycles such as C and N mineralization, and still affect the dynamics and fate of pesticides. In addition, antibiotics can be harmful to non-target organisms, affecting them directly or through alterations between ecological relations. Enrofloxacin (ENR), a fluoroquinolone, is employed extensively in Brazilian poultry farming for prophylaxis and therapeutics and ciprofloxacin (CIP), its main metabolite,