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Abstracts**

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# Interdependence between bacterial resistance to antibiotics and pollutants

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75

## **Abstract**

The intrinsic use of antibiotics for medical, veterinary and agricultural purposes has been resulted in their continuous release into the environment. The main concern for this release has been related to the development of antibiotic resistance genes (ARG) and, implicitly, to antibiotic-resistant bacteria. Although the factors which promote the emergence of antibiotic resistance (ABR) in the clinical setting have been well documented in the special literature, there has been significantly less information relating to ABR organisms in the environment such as their origins, persistence, fate and contributions to human and animal health. In addition, the presence of pollutants has been an extra stress factor for the environment and its bacterial communities.

The main goal of this study was to analyze how the pollutants modulated the bacterial resistance to antibiotics which could enhance the resistance and pathogenic potential of ARB (antibiotic resistance bacteria) collected from wastewater treatment plants (WWTPs) and their upstream and downstream environmental sites.

The results indicated the presence of resistant Gram negative bacteria to the most commonly used antibiotics, especially beta-lactams in all the sampling points. The main differences consisted in the bacterial density in those locations, due to WWTP removal efficiency up to 80%. Moreover, there was a direct correlation between the pollutant concentration and the bacterial density and bacterial structural communities.

*Keywords: resistant bacteria; antibiotics; pollutants.*

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