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TITLE: Antibiotics in the coastal water of the South Yellow Sea in China: Occurrence, distribution and ecological risks

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ABSTRACT:

The occurrence and distribution of 25 antibiotics from 5 categories in Yancheng coastal area of the South Yellow Sea were investigated using solid-phase extraction coupled with high-performance liquid chromatography tandem mass spectrometry. Results showed that these antibiotics were widely present in this region with the total concentration up to 1349.2ng/L. Fluoroquinolones and sulfonamides were the most abundant categories contributing 46.5%, and 21.4% to the total antibiotics burden. Trimethoprim was the antibiotic detected in all the samples. The detection rates of erythromycin-H2O, sulfamethoxazole and florfenicol were 70.0%, 56.7% and 53.4%, respectively. The distribution of antibiotics demonstrated a seaward decreasing trend with the attenuation rate ranging from 0.07 to 0.19km-1 in this region. Log total antibiotic concentrations was significantly correlated with DOC (dissolved organic carbon) contents, salinity and distance from the coast ($p<0.05$), which indicated the vital effect of these factors on the transport and fate of antibiotics. Risk assessment revealed that individual antibiotic could mainly pose a low to medium ecological risk, while the risk of antibiotic mixture on aquatic organisms needed further investigation.

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