

Environmental antibiotic pollution and resistance in China: pollution status, degradation methods and control strategies

ABSTRACT

Antibiotics and antibiotic resistance genes (ARGs) which are closely related to human activities and life are globally recognized as emerging pollutants in the 21st century. China is one of the largest producers and consumers of antibiotics in the world, is also one of the countries most severely polluted by antibiotics. Antibiotics and ARGs are widely present in surface water, soil, animal excreta and wastewater treatment plants in China. When the concentration exceeds the risk quotient ($RQ \geq 0.01$), they pose a threat to human health. This review systematically combed the relevant research literature on antibiotics in China in recent years, and made a key summary from four aspects: 1) The current situation of antibiotic pollution in various environmental medium in China; 2) The pollution sources and abundance levels of ARGs in the seven administrative regions of China; 3) The potential risks and hazards of antibiotics and their resistance; 4) The latest and most representative antibiotic degradation methods for the management of antibiotics. Finally, this review brings forward suggestions for future antibiotic supervision, including strictly implementing relevant laws and regulations, formulating specific supporting measures, encouraging the research and development of antibiotic alternatives. It is believed that in the near future, the problem of antibiotic pollution in China can be improved to the greatest extent.