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GLOBAL TRENDS AND PERFORMANCES OF STUDIES ON ANTIBIOTIC RESISTANCE GENES

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Abstract

There are substantial publications about the research of antibiotic resistance genes (ARGs). The purpose of this paper is to identify the global trends and performances of ARGs research. Literatures of ARGs that published between 1974 and 2016 from Web of Science Core Collection were used to create the bibliometric database for the present study in which we coupled cluster analysis and network analysis to visualize research trends of ARGs with international collaborations and trans-disciplinary advances. Stage II (1998-2016) showed that international cooperation is much more prevalent than Stage I (1974-1997), especially among the United States, the United Kingdom and China. There were more researches about "Engineering", "Chemistry" and "Water resources" and more multidisciplinary cross in Stage β (1998-2016) compared to Stage α (1974-1997). There were also two stages about keywords analysis: Stage i (1991-2005) and Stage ii (2006-2016). Stage i focused on basic theoretical studies for antibiotic resistance. However, Stage ii mainly explored the relationship among antibiotics, ARGs and antibiotic resistant bacteria (ARB) in different environmental compartments. Specially, wastewater was the most studied environmental compartment, and was followed by soil. The most studied organism was bacteria especially ARB, and included Escherichia coli, Staphylococcus aureus and Methicillin-resistant staphylococcus aureus. Furthermore, swine was the hot research animal. Metagenomics, sulfonamides and some pathogens were the research hotspots. International cooperations and multidisciplinary cross can improve the quality of publications and increase the numbers of papers. The mechanisms research among antibiotics, ARGs and ARB and remove ways of ARGs are research hotspots in future.

Key words: antibiotic resistance genes, interdisciplinary advances, international collaboration, research hotspots

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