

O 10. ESKAPE PATHOGENS IN ECOSYSTEMS: QUANTITATIVE MICROBIAL RISK ASSESSMENT

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ABSTRACT: Anthropogenic activities play a significant role in shaping the environmental resistome. These findings have led to the development of the "One-Health" approach, which seeks to improve understanding of AMR in the human, animal, and environment. ESKAPE is a group of six bacterial pathogens that are highly virulent and resistant to antibiotics, including *Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa*, and *Enterobacter* spp. ESKAPE pathogens are differentiated from other pathogens due to their increased resistance to commonly used antibiotics such as penicillin, vancomycin, carbapenems and more. From 2016 to 2021, various types of ecosystems were monitored for the presence of ESKAPE pathogens, including a water ecosystem (river Uzh) and agricultural ecosystems. The results showed an increasing number of ESKAPE pathogens in these environments. Specifically, the number of ESKAPE pathogens in the river Uzh increased by 1.65 times (from n=35 to n=58) and in agroecosystems by 2.21 times (from n=73 to n=162). The water ecosystem was found to contain *Klebsiella pneumoniae*, *Enterococcus faecalis*, and *Enterococcus faecium* with high level of antibiotic resistance, while soil samples from the agricultural ecosystems contained *Pseudomonas aeruginosa*, *Enterococcus faecium*, *Enterococcus faecalis*, *Staphylococcus aureus*, and *Acinetobacter baumannii*. These findings highlight the urgent need for better monitoring and management of ESKAPE pathogens in various ecosystems to prevent further spread and development of antibiotic resistance.

Keywords: Resistome, Environment, ESKAPE Pathogens