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## **DEPRESSION OF SOIL MICROBIAL RESPIRATION, AMMONIFICATION AND CELLULOSE DEGRADATION UNDER THE STRESS OF ANTIBIOTIC RESIDUALS**

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### **Abstract**

Antibiotic pollution has become one of the most important emerging soil contamination types, and has received great attentions in recent years. Understanding the microbial functional processes of soil ecosystems under antibiotic contamination is of critical importance for ecological risk assessment and pollution control. In this study, the responses of soil microbial respiratory activity and ammonification were studied under different concentrations of tetracycline, chlortetracycline, and norfloxacin. Generally, the antibiotic residuals showed a depressed effect on microbial respiration with residual concentrations of 1-20 ppm, and the effect was dose- and type - dependent. Depression was apparent at high doses. Stimulation effects were only occasionally observed at low concentrations. Similar results were also observed in ammonification with the maximal inhibition rate exceeding 8%. The depression effect on ammonification was gradually weakened in two weeks. Soil microbial cellulose decomposition activity was studied with the addition of tetracycline, chlortetracycline, norfloxacin, and enrofloxacin. The four types of antibiotics were tested separately under the same concentration (10 ppm). The cellulose decomposition rates with treatments of tetracycline, chlortetracycline, enrofloxacin and norfloxacin were 5.2%, 4.9%, 4.8%, and 4.5%, respectively, which were lower than the control (5.5%).

*Key words:* ammonification, antibiotic, cellulose decomposition, respiration

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