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研究报告

花椒叶浸提液对土壤微生物数量和土壤酶活性的影响

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摘要 通过用花椒叶浸提液浇灌盆栽花椒幼苗，研究浸提液对土壤酶和土壤微生物的影响.结果表明, 花椒叶浸提液使根际土中细菌、真菌和放线菌数量以及微生物总数均有不同程度的减少，根际土中真菌和放线菌的数量变化呈降-升-降-升的趋势.20、60和80 g·L^{-1}浓度的叶浸提液使非根际土中细菌的数量显著增加21.59%、107.55%和8.62%，而40 g·L-1浓度的叶浸提液则使非根际土中细菌数量显著降低22.56%.叶浸提液使根际土蛋白酶、蔗糖酶和酸性磷酸酶活性明显低于非根际土相应的酶活性，而过氧化氢酶和多酚氧化酶活性则显著升高.土壤的蛋白酶活性与蔗糖酶活性呈显著正相关，与土壤放线菌数量呈显著负相关；多酚氧化酶活性与蔗糖酶活性呈显著负相关，与细菌、真菌、放线菌以及微生物总数呈显著正相关；放线菌只与蛋白酶、多酚氧化酶、蔗糖酶3种酶活性及真菌呈显著相关，与过氧化氢酶、酸性磷酸酶以及细菌和微生物总数的相关性均不显著.

关键词 化感作用 花椒 土壤酶 土壤微生物

分类号

Effects of *Zanthoxylum bungeanum* leaf extract on soil microbe quantity and enzyme activities

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Abstract

In a pot experiment, the aqueous extract of 10 years old *Zanthoxylum bungeanum*'s leaves was used to water *Z. bungeanum* seedlings to test its effects on soil microbes and enzyme activities. The results showed that the leaf extract decreased the total amount of microbes and the quantity of bacteria, fungi and actinomyces in rhizosphere soil, but increased the total amount of microbes in non-rhizosphere soil. After watering with the extract, the roteinase, invertase and acid phosphatase activities in rhizosphere soil were considerably lower than those in non-rhizosphere soil, while catalase and polyphenol oxidase activities were in adverse. Soil proteinase activity had a significant positive correlation with invertase activity, but a significant negative correlation with actinomyces amount. Soil polyphenol oxidase activity had a significant negative correlation with invertase activity, but a positive correlation with the total amount of microbes and the quantity of bacteria, fungi and actinomyces. Soil actinomyces only had significant correlations with proteinase, polyphenol oxidase and invertase activities and fungi.

Key words Allelopathy *Zanthoxylum bungeanum* Soil enzyme Soil microbe

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