

两种不同类型凋落物分解和胞外酶活性 对降雨减少的响应*

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摘要:【目的】明确两种不同类型凋落物分解和胞外酶活性对影响降雨响应。【方法】在中国西南地区, 通过模拟降雨试验, 探讨降雨减少对凋落物(常绿树种大叶樟与落叶树种红椿)质量残留率和胞外酶活性(β -葡萄糖苷酶、 β -N-乙酰氨基葡萄糖酶、纤维二糖水解酶、酸性磷酸酶和亮氨酸氨基肽酶)的影响。研究了三个减雨水平: 对照、25%和50%的减少量。【结果】降雨减少普遍会抑制凋落物分解速率, 但会刺激两种凋落物的细胞外酶活性。这些影响取决于凋落物类型和采样日期。凋落物质量残留率与 β -葡萄糖苷酶、纤维二糖水解酶和 β -N-乙酰氨基葡萄糖酶的活性呈正相关。因此, 两种亚热带凋落物物种的凋落物分解和酶活性对降水减少的响应均不对称。【结论】降雨的减少抑制了凋落物的分解, 但促进了两种不同类型凋落物的细胞外酶活性。这些发现强调了降水显著减少的亚热带地区凋落物分解和细胞外酶活性的不同响应。

Response of two contrasting species of litter decomposition and extracellular enzyme activities to reduced precipitation

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Abstract: 【Objective】 The aim of this study was to explore these responses in two subtropical litter species under reduced precipitation. 【Method】 Precipitation manipulation experiment was conducted to explore the impacts of reduced precipitation on mass remaining and extracellular enzyme activities (β -glucosidase, β -N-acetylglucosaminidase, cellobiohydrolase, acid phosphatase, and leucine aminopeptidase) in contrasting litter species (evergreen *Cinnamomum austrosinense* vs. deciduous *Toona ciliate*) in southwestern China. Three throughfall reduction levels were investigated: control without throughfall reduction, 25%, and 50% throughfall reduction. 【Result】 Reduced precipitation often inhibited decomposition rates but stimulated the extracellular enzyme activities of both litter species. These positive effects were dependent on litter type and sampling date. The remaining litter mass was positively correlated with the activities of β -glucosidase, cellobiohydrolase, and β -N-acetylglucosaminidase. As a consequence, both litter decomposition and enzyme activities showed divergent responses to reduced precipitation in the two subtropical litter species. 【Conclusion】 Reduced precipitation

decelerates litter decomposition but promotes extracellular enzyme activities in two contrasting litter species. These findings emphasize the divergent responses of litter decomposition and extracellular enzyme activities in subtropical regions experiencing significant precipitation reduction.