

陈博,李志华,何茜,李吉跃,苏艳,张忠友,刘育贤. 汶川大地震灾后不同滑坡体上柏木体内非结构性碳水化合物的特性. 生态学报, 2012, 32(3): 999-1006

汶川大地震灾后不同滑坡体上柏木体内非结构性碳水化合物的特性

Studies of non-structural carbohydrates of *Cupressus funebris* in different landslides after Wenchuan Earthquake

投稿时间: 2011-5-13 最后修改时间: 2011-11-15

DOI: [10.5846/stxb201105130623](https://doi.org/10.5846/stxb201105130623)

中文关键词: [柏木](#) [汶川大地震](#) [可溶性糖](#) [淀粉](#)

English Keywords: [Cupressus funebris](#) [wenchuan earthquake](#) [soluble sugar](#) [starch](#)

基金项目:

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中文摘要:

"5.12"汶川大地震不仅直接摧毁森林17.3万 hm^2 ,还通过对土壤和林内生境的剧烈改变对现存森林造成潜在威胁。以地震重灾区北川的主要分布树种柏木为研究对象,在2009年6月初(夏初)和10月初(秋季)两个时期,对不同类型柏木林的叶、枝、根可溶性糖和淀粉含量进行测定分析,旨在认识震后初期柏木对逆境胁迫的生理响应,为研究大地震对植物体内碳水化合物的影响和对逆境的适应性提供科学依据。结果表明:地震对柏木体内碳水化合物的含量有较大影响,总体表现为严重滑坡类型具有较高的可溶性糖含量,较低根系淀粉含量。夏初严重滑坡类型柏木叶、枝、根可溶性糖含量分别为(11.44±1.08)%、(4.64±0.42)%、(5.48±0.51)%。就不同器官而言,可溶性糖含量叶>根>枝,淀粉含量叶>枝>根;夏初碳水化合物含量均高于秋季,且仅叶片可溶性糖和淀粉含量在不同季节存在显著性差异($P<0.05$),说明柏木叶片对地震反应最为敏感。地震带来的灾害如山体滑坡等对植物的生理活动产生巨大影响,不利于林木生长。

English Summary:

2008 Wenchuan "5.12" destructive earthquake, not only directly destroy forest 17.3 million hm^2 , but also bring potential threat to existing forest by changing soil and firewood habitat within. Major species *Cupressus funebris* was selected in this study, which was in the Beichuan and its surrounding areas in the earthquake disaster areas. In three states: severe landslides, landslides and non-landslides, soluble sugar and starch contents were measured in early June 2009 (early summer) and early in October (autumn). It aims to explore the responses of carbohydrates of *Cupressus funebris* to Wenchuan earthquake in the earthquake zone, in order to provide theoretical basis and practical guidance for studying the impact of carbohydrates and adaption to stress after the earthquake. The results show that: earthquake has a greater influence on contents of carbohydrates of *Cupressus funebris*; the severe landslides have higher soluble sugar contents, and low starch contents in the roots; The soluble sugar contents in leaves, branches and roots of severe landslides in early summer are (11.44±1.08)%、(4.64±0.42)%、(5.48±0.51)% respectively. To different organs, the soluble sugar contents showed leaves>roots>branches and leaf starch contents>branch>root; carbohydrate content in early summer were higher than in autumn. Only soluble sugar and starch contents in different seasons showed significant differences($P<0.05$), indicating that leaves of *Cupressus funebris* are more sensitive to earthquakes. That indicated earthquake caused disaster such as landslides and collapses have great effects on physiological activities of plants and did not conducive to tree growth.

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