

Impact of transgenic *Liriodendron hybrid* harboring LhWOX1 gene on rhizosphere microbial diversity

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Background: The introduction of foreign genes often leads to changes in the phenotype of recipient plants, and may cause changes in the surrounding micro-ecosystem^[1]. There is no consistent conclusion as to whether the target gene can transfer horizontally or affect the change of microbial colony when transgenic plants are planted in the field^[2]. In this study, the genetic stability, dynamic expression pattern of LhWOX1 in transgenic *Liriodendron hybrid* and its influence on plant growth were analyzed.

Methods: PCR technology was used to detect the stability of foreign genes, and RT-PCR was used to detect the temporal and spatial dynamic expression of LhWOX1 gene, and the total DNA of soil microorganisms and plants around the experimental forest was extracted for PCR detection. The basic growth of transgenic *Liriodendron hybrid* harboring LhWOX1 gene was investigated by field measurement, and the number types and diversity of soil microorganisms were investigated by dilution plate method and illumina Hiseq2500 sequencing method.

Results: The expression of LhWOX1 gene in various tissues of transgenic plants was relatively stable, with high expression abundance in stem segments and other tissues, and had obvious tissue-specific expression characteristics. LhWOX1 gene had no obvious effect on plant height, but can increase the number of stem leaves, reduce the number of cells and increase the number of upper epidermal cells significantly. The LhWOX1 gene has no obvious effect on the composition of soil microbial colonies, and there is no horizontal gene transfer phenomenon.

Conclusion: The LhWOX1 gene had no significant impact on the composition of soil microbial colonies around *Liriodendron hybrid* plants.

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References

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