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白花曼陀罗毛状根的诱导及东莨菪碱和莨菪碱的合成

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中文摘要：目的：建立白花曼陀罗毛状根诱导和培养体系并对毛状根中东莨菪碱和莨菪碱的动态合成进行初步研究。 方法：以白花曼陀罗子叶为外植体,利用发根农杆菌C58C1诱导毛状根,测定白花曼陀罗毛状根的生长曲线及东莨菪碱和莨菪碱的动态合成曲线,利用HPLC测定不同毛状根单克隆系中东莨菪碱和莨菪碱的含量。 结果：以野生白花曼陀罗的子叶为外植体,消毒后直接诱导毛状根,诱导率达70%,25 d液体悬浮培养的毛状根生物量积累及东莨菪碱和东莨胆碱含量达到最高。获得高产东莨菪碱的毛状根系M2和高产莨菪碱的毛状根系M1,毛状根中东莨菪碱和莨菪碱的积累效率分别是是野生白花曼陀罗叶片中含量的2.53,5.37倍。 结论：白花曼陀罗毛状根诱导和培养体系的建立为实现东莨菪碱和莨菪碱的工业化大规模生产奠定基础。

中文关键词：白花曼陀罗 毛状根 东莨菪碱 莨菪碱 HPLC

Scopolamine and hyoscyamine synthesis in hair roots culture of *Datura metel*

Abstract:Objective: To establish the hair roots culture system of *Datura metel* and study the hair roots growth and biosynthesis of scopolamine and hyoscyamine in hair roots culturing system.**Method:** Direct degermed cotyledon of wild *D. metel* was infected by Agrobacterium tumefaciens strain C58C1 to obtain hair roots. Growth curves and scopolamine and hyoscyamine biosynthesis curves were determined. The scopolamine and hyoscyamine from different hair roots lines were examined by HPLC.**Result:** Hair roots induction rate reached 70%. After 25 days cultured in 1/2 MS liquid nutrient medium, the hair roots weight, content of scopolamine and hyoscyamine reached maximum, tow high efficient accumulation hyoscyamine and scopolamine hair roots lines M1 and M2 were obtained. The medial accumulation coefficient of hyoscyamine and scopolamine were 2.53 times and 5.37 times compared with the leaves of wild *D. metel* respectively.**Conclusion:** The established hair roots induction and culture system of *D. metel* provided a foundation for further obtaining scopolamine and hyoscyamine.

keywords:*Datura metel* hair roots scopolamine hyoscyamine HPLC

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