

论文

苯丙氨酸、蔗糖和甘露醇对杂种红豆杉细胞的生长及形成紫杉醇、巴卡亭III和10-去乙酰基巴卡亭III的影响

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摘要:

研究了苯丙氨酸、蔗糖和甘露醇对杂种红豆杉悬浮细胞的生长及形成紫杉醇、巴卡亭II和10-去乙酰基巴卡亭II的影响。结果表明,培养基中添加1.0mmol·L⁻¹或2.0mmol·L⁻¹苯丙氨酸和在培养28d时同时补加73.0mmol·L⁻¹蔗糖和137.3mmol·L⁻¹甘露醇能显著地促进细胞的生长和这3种紫杉烷的形成。同对照相比,有苯丙氨酸又补加蔗糖和甘露醇的细胞生物量增加了0.6~0.8倍,紫杉醇的产量增加了9~10倍,巴卡亭II的产量增加了2.5~3.0倍,10-去乙酰基巴卡亭II的产量增加了7倍。在培养28d时补加73.0mmol·L⁻¹蔗糖能显著地促进细胞的生长,但对细胞中这3种紫杉烷的含量没有显著的影响。

关键词: 杂种红豆杉 细胞悬浮培养 紫杉醇 巴卡亭III 10-去乙酰基巴卡亭III

EFFECTS OF PHENYLALANINE, SUCROSE AND MANNITOL ON THE GROWTH AND PRODUCTION OF TAXOL, BACCATIN III AND 10-DEACETYLBACCATIN III IN SUSPENSION CELLS OF TAXUS MEDIA

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Abstract:

The effects of phenylalanine, sucrose and mannitol on the cell growth and the production of taxol, baccatin III and 10-deacetyl baccatin III in the suspension cells of *Taxus media* were studied. The results showed that phenylalanine 1.0 mmol·L⁻¹ or 2.0 mmol·L⁻¹ initially added into the medium, and sucrose 73.0 mmol·L⁻¹ and mannitol 173.3 mmol·L⁻¹ added into the medium at the 28th d of culture strongly promoted the cell growth and the formation of the three taxanes in the suspension cells. Compared with those of the control, the cell biomass of the treatments supplemented with phenylalanine and added with sucrose and mannitol at the 28th d of culture increased by 0.6~0.8-fold, taxol yield by 9~10-fold, baccatin III yield by 2.5~3.0-fold, and 10-deacetyl baccatin III yield by 7-fold. Addition of sucrose 73.0 mmol·L⁻¹ at the 28th d of culture significantly promoted the cell growth, but showed little effect on the contents of the three taxanes in the suspension cultures.

Keywords: Suspension cell culture Taxol Baccatin III 10-Deacetyl baccatin III *Taxus media*

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