

芝麻愈伤组织诱导与植株再生体系的建立

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Establishment of Sesame Callus Induction and Shoot Regeneration System

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摘要

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摘要 以芝麻栽培种(*Sesamum indicum*, 2n=26)、野生种(*S. radiatum*, 2n=64; *S. schinzianum*, 2n=64)及其远缘杂交后代(*S. schinzianum* × *S. indicum*)为材料,研究了不同基因型、外植体类型、激素种类及其浓度对芝麻愈伤组织诱导及植株再生的影响,建立了芝麻愈伤组织诱导及高频植株再生的技术体系。结果表明,6-BA/NAA激素组合有利于绿色紧密型愈伤组织的形成及分化;最佳愈伤组织诱导及分化培养基为MS+ 0.1 mg·L⁻¹NAA + 2.0 mg·L⁻¹6-BA+ 30 g·L⁻¹蔗糖。在该培养条件下,野生种下胚轴愈伤组织的诱导率最高为97.50%,分化率为94.02%;栽培种下胚轴愈伤组织的诱导率最高为40.60%,分化率为8.16%;远缘杂交后代幼胚外植体愈伤组织的诱导率最高为46.67%,分化率为89.29%。该研究结果为芝麻转基因技术体系的建立及新种质创制奠定了基础。

关键词: 愈伤组织 基因型 诱导 再生 芝麻

Abstract: We examined the effect of genotypes, explant types, combinations and concentrations of growth regulators on sesame callus induction and shoot regeneration with the cultivars *Sesamum indicum* L., 2n=26; the wild species *S. radiatum*, 2n=64, and *S. schinzianum*, 2n=64; and their distant hybrid strain *S. schinzianum* × *S. indicum*. We established the technical system of sesame callus induction and shoot regeneration with high frequency. Among the growth regulators, BA and NAA are suitable for inducing compact green callus, which gives a high differentiation frequency. The optimal medium for sesame callus induction and differentiation was MS basal medium supplemented with 0.1 mg·L⁻¹ NAA, 2.0 mg·L⁻¹ 6-BA and 30 g·L⁻¹ sucrose. With this medium, the ratios of the highest level of callus induction and differentiation were 97.50% and 94.02% respectively, which were obtained from wild sesame hypocotyl explants, with the corresponding frequencies of 40.60% and 8.16% for cultivar hypocotyl explants. For the immature embryo explants from the distant hybrids, we achieved the maximum ratios of callus induction (46.67%) and differentiation (89.29%) with this medium. These results form the basis for both germplasm conservation and transgene studies in sesame.

Keywords: callus genotype induction regeneration sesame

Received 2011-09-29; published 2012-03-16

Fund:

国家芝麻产业技术体系建设项目;国家973计划课题

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引用本文:

苗红梅, 琚铭, 魏利斌等.芝麻愈伤组织诱导与植株再生体系的建立[J] 植物学报, 2012,V47(2): 162-170

Hongmei Miao, Ming Ju, Libin Wei etc.Establishment of Sesame Callus Induction and Shoot Regeneration System[J] , 2012,V47(2): 162-170

链接本文:

<http://www.chinbullbotany.com//CN/10.3724/SP.J.1259.2012.00162> 或 <http://www.chinbullbotany.com//CN/Y2012/V47/I2/162>

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