From: Coleman, Cimmerian

Sent: 4/8/2015 2:29:27 PM

To: TTAB EFiling

CC:

Subject: U.S. TRADEMARK APPLICATION NO. 86098613 - LIVIN' EASY - 73780/W225 - Request for Reconsideration Denied - Return to TTAB - Message 1 of 2

****

Attachment Information:

Count: 16

Files: 1evid-1.jpg, 1evid-2.jpg, 2evid-1.jpg, 2evid-2.jpg, 3evid-1.jpg, 3evid-2.jpg, 3evid-3.jpg, 3evid-4.jpg, 4evid-1.jpg, 4evid-2.jpg, 5evid-1.jpg, 5evid-2.jpg, 6evid-1.jpg, 6evid-2.jpg, 6evid-3.jpg, 86098613.doc

UNITED STATES PATENT AND TRADEMARK OFFICE (USPTO)
OFFICE ACTION (OFFICIAL LETTER) ABOUT APPLICANT'S TRADEMARK APPLICATION

U.S. APPLICATION SERIAL NO. 86098613

MARK: LIVIN' EASY

CORRESPONDENT ADDRESS:

GARY J NELSON

CHRISTIE PARKER & HALE LLP

PO BOX 29001

GLENDALE, CA 91209-9001

GENERAL TRADEMARK INFORMATION:

http://www.uspto.gov/trademarks/index.jsp

VIEW YOUR APPLICATION FILE

APPLICANT: Early Morning LLC

CORRESPONDENT'S REFERENCE/DOCKET NO:

73780/W225

CORRESPONDENT E-MAIL ADDRESS:

pto@cph.com

REQUEST FOR RECONSIDERATION DENIED

ISSUE/MAILING DATE: 4/8/2015

The trademark examining attorney has carefully reviewed applicant's request for reconsideration and is denying the request for the reasons stated below. *See* 37 C.F.R. §2.63(b)(3); TMEP §§715.03(a)(ii)(B), 715.04(a). The following refusal made final in the Office action dated June 22, 2014 is maintained and

continues to be final: The applied-for mark is a varietal name and does not function as a trademark to indicate the source of applicant's goods. *See* TMEP §§715.03(a)(ii)(B), 715.04(a).

In addition to the evidence attached in previous Office actions, the examining attorney hereby attaches additional Internet evidence from various websites. The evidence shows the mark is being used as a cultivar name for roses. Applicant's broad identification is presumed to include all types of roses.

In the present case, applicant's request has not resolved all the outstanding issue(s), nor does it raise a new issue or provide any new or compelling evidence with regard to the outstanding issue(s) in the final Office action. In addition, applicant's analysis and arguments are not persuasive nor do they shed new light on the issues. Accordingly, the request is denied.

If applicant has already filed a timely notice of appeal with the Trademark Trial and Appeal Board, the Board will be notified to resume the appeal. *See* TMEP §715.04(a).

If no appeal has been filed and time remains in the six-month response period to the final Office action, applicant has the remainder of the response period to (1) comply with and/or overcome any outstanding final requirement(s) and/or refusal(s), and/or (2) file a notice of appeal to the Board. TMEP §715.03(a)(ii)(B); *see* 37 C.F.R. §2.63(b)(1)-(3). The filing of a request for reconsideration does not stay or extend the time for filing an appeal. 37 C.F.R. §2.63(b)(3); *see* TMEP §§715.03, 715.03(a)(ii)(B), (c).

/Cimmerian Coleman/

U.S. Patent and Trademark Office

Trademark Examining Attorney

Law Office 102

571.272.9146

cimmerian.coleman@uspto.gov

NCBI Resources How To Sign in to NCBI

PubMed.gov US National Library of Medicine National Institutes of Health

PubMed Search

Advanced Help

Abstract Send to:

Plant Cell Rep. 2007 Feb;26(2):153-60. Epub 2006 Sep 14.

2,4,5-Trichlorophenoxyacetic acid promotes somatic embryogenesis in the rose cultivar "Livin' Easy" (Rosa sp.).

Estabrooks T[1], Browne R, Dong Z.

Author information

Abstract

Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE technology in rose. Rose SE technology requires improvement before it can be implemented as a production system on a commercial scale. In the present work, we assessed 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), a synthetic auxin not previously tested in rose, for its effectiveness to induce SE in the rose cultivar "Livin' Easy" (Rosa sp.). We ran a parallel comparison to the commonly used 2,4-dichlorophenoxyacetic acid (2,4-D). We tested each auxin with two different basal media: Murashige and Skoog (MS) basal medium and woody plant medium (WPM). MS medium resulted in somatic embryo production, whereas WPM did not. 2,4,5-T induced SE over a greater concentration range than 2,4-D's and resulted in significantly greater embryo yields. 2,4,5-T at a concentration of 10 or 25 microM was better for embrygenic tissue initiation than 2,4,5-T at 5 microM. Further embryo development occurred when the tissue was transferred to plant growth regulator (PGR) free medium or media with 40% the original auxin concentration. However, the PGR-free medium resulted in a high percentage of abnormal embryos (32.31%) compared to the media containing auxins. Upon transfer to germination medium, somatic embryos successfully converted into plantlets at rates ranging from 33.3 to 95.2%, depending on treatment. Survival rates 3 months ex vitro averaged 14.0 and 55.6% for 2,4-D- and 2,4,5-T-derived plantlets, respectively. Recurrent SE was observed in 60.2% of the plantlets growing on germination medium. This study is the first report of SE in the commercially valuable rose cultivar 'Livin' Easy' (Rosa sp.) and a suitable methodology was developed for SE of this rose cultivar.

PMID: 16972095 [PubMed - indexed for MEDLINE]

Full text links

SpringerLink

Save items

Add to Favorites

Related citations in PubMed

Direct somatic embryogenesis and synthetic seed pr [Plant Cell Rep. 2003]

Role of PGrs and inhibitors in induction and control of s [Indian J Exp Biol. 2009]

The use of somatic embryogenesis for plant propagatior [Mol Biotechnol. 2000]

Initiation of somatic embryogenesis from immature zygo [Tree Physiol. 2011]

Review In vitro propagation of rose--a review. [Biotechnol Adv. 2006]

See reviews...

See all...

Related information

PubChem Compound

PubChem Compound (MeSH Keyword)

PubChem Substance

PubChem Substance (MeSH Keyword)

Publication Types, MeSH Terms, Substances

LinkOut - more resources

Recent Activity

Turn Off Clear

2,4,5-Trichlorophenoxyacetic acid promotes somatic embryoge... PubMed

See more...

PubMed Commons

PubMed Commons home

0 comments

How to join PubMed Commons

You are here: NCBI > Literature > PubMed

Write to the Help Desk

GETTING STARTED
NCBI Education
NCBI Help Manual
NCBI Handbook
Training & Tutorials

RESOURCES
Chemicals & Bioassays
Data & Software
DNA & RNA
Domains & Structures
Genes & Expression
Genetics & Medicine
Genomes & Maps
Homology
Literature
Proteins
Sequence Analysis
Taxonomy
Training & Tutorials
Variation

POPULAR
PubMed
Bookshelf
PubMed Central
PubMed Health
BLAST
Nucleotide
Genome
SNP
Gene
Protein
PubChem

FEATURED
Genetic Testing Registry
PubMed Health
GenBank
Reference Sequences
Gene Expression Omnibus
Map Viewer
Human Genome
Mouse Genome
Influenza Virus
Primer-BLAST
Sequence Read Archive

NCBI INFORMATION
About NCBI
Research at NCBI
NCBI News
NCBI FTP Site
NCBI on Facebook
NCBI on Twitter
NCBI on YouTube

Copyright | Disclaimer | Privacy | Browsers | Accessibility | Contact
National Center for Biotechnology Information, U.S. National Library of Medicine
8600 Rockville Pike, Bethesda MD, 20894 USA

ResearchGate

Already a member? Log in

Zhongmin Dong
St. Mary's University

Article

2,4,5-Trichlorophenoxyacetic acid promotes somatic embryogenesis in the rose cultivar "Livin' Easy" (Rosa sp.).

Tammy Estabrooks | Robin Browne | Zhongmin Dong

Department of Biology, Saint Mary's University, Halifax, Nova Scotia, Canada.

Plant Cell Reports (Impact Factor: 2.94). 03/2007; 26(2):153-60. DOI: 10.1007/s00299-006-0231-5
Source: PubMed

ABSTRACT Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE

0 FOLLOWERS · 106 VIEWS

CITATIONS (60) CITED IN (10)

Article: An efficient system to produce transgenic plants via cyclic leave-originated secondary somatic embryogenesis in Rosa rugosa

Request full-text

SIMILAR PUBLICATIONS

In Vitro plant regeneration of Aster scaber via somatic embryogenesis
Kyung Hwan Boo, Dang Viet Cao, Reniel S Pamplona, Doseung Lee, Key-Zung Riu, Dong-Sun Lee

Clonal fidelity of Iris sibirica plants regenerated by somatic embryogenesis and organogenesis in leaf-base culture — RAPD and flow cytometer analyses
M. Stanišić, M. Raspor, S. Ninković, S. Milošević, D. Ćalić, B. Bohanec, M. Trifunović, M. Petrić, A. Subotić, S. Jevremović

Somatic embryogenesis and in vitro plantlet regeneration in Salicornia brachiata Roxb.
Mangal S. Rathore, Nikita Palwal, K. G. Vijay Anand, Pradeep K. Agarwal

Wen Xing, Ying Bao, Ping Luo, Manzhu Bao, Guogui Ning

[Show abstract]

Acta Physiologiae Plantarum 08/2014; 36(8):2013-2023.
DOI:10.1007/s11738-014-1575-9 · 1.52 Impact Factor

Article: **Morphohistological analysis of the origin and development of Rosa canina protocorm-like bodies**

Feng-Luan Liu, Isak Abdurazak, Lin Xi, Bin Gao, Ling Wang, Chuan-Wei Tian, Liang-Jun Zhao

[Show abstract]

Scientia Horticulturae 03/2014; 167:107–116.
DOI:10.1016/j.scienta.2014.01.001 · 1.58 Impact Factor

Article: **Efficiency of direct and indirect shoot organogenesis in different genotypes of Rosa hybrida**

Leila Pourhosseini, Maryam Jafarkhani Kermani, Ali Akbar Habashi, Ahmad Khalighi

[Show abstract]

Plant Cell Tissue and Organ Culture 01/2012; 112(1).
DOI:10.1007/s11240-012-0210-1 · 2.61 Impact Factor

Show more

Data provided are for informational purposes only. Although carefully collected, accuracy cannot be guaranteed. The impact factor represents a rough estimation of the journal's impact factor and does not reflect the actual current impact factor. Publisher conditions are provided by RoMEO. Differing provisions from the publisher's actual policy or licence agreement may be applicable.

© 2008-2015 researchgate.net. All rights reserved.

About us · Contact us · Developers · News · Privacy · Terms

SpringerLink
Sign up / Log in English Academic edition
Feedback
Close
» Download PDF (361 KB)
Page 1

Plant Cell Rep (2007) 26:153–160
DOI 10.1007/s00299-006-0231-5

CELL BIOLOGY AND MORPHOGENESIS

2,4,5-Trichlorophenoxyacetic acid promotes somatic embryogenesis in the rose cultivar 'Livin' Easy' (*Rosa* sp.)

Tammy Estabrooks · Robin Browne · Zhongmin Dong

Received: 6 March 2006 / Revised: 16 July 2006 / Accepted: 11 August 2006 / Published online: 14 September 2006
© Springer-Verlag 2006

Abstract Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE technology in rose. Rose SE technology requires improvement before it can be implemented as a production system on a commercial scale. In the present work, we assessed 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), a synthetic auxin not previously tested in rose, for its effectiveness to induce SE in the rose cultivar 'Livin' Easy' (*Rosa* sp.). We ran a parallel comparison to the commonly used 2,4-dichlorophenoxyacetic acid (2,4-D). We tested each auxin with two different basal media: Murashige and Skoog (MS) basal medium and woody plant medium (WPM). MS medium resulted in somatic embryo production, whereas WPM did not. 2,4,5-T induced SE over a greater concentration range than 2,4-D's and resulted in significantly greater embryo yields. 2,4,5-T at a concentration of 10 or 25 μM was better for embryogenic tissue initiation than 2,4,5-T at 5 μM. Further embryo development occurred when the tissue was transferred to plant growth regulator (PGR) free medium or media with 40% the original auxin tion medium, somatic embryos successfully converted into plantlets at rates ranging from 33.3 to 95.2%, depending on treatment. Survival rates 3 months ex vitro averaged 14.0 and 55.6% for 2,4-D- and 2,4,5-T-derived plantlets, respectively. Recurrent SE was observed in 60.2% of the plantlets growing on germination medium. This study is the first report of SE in the commercially valuable rose cultivar 'Livin' Easy' (*Rosa* sp.) and a suitable methodology was developed for SE of this rose cultivar.

Keywords *Rosa* · Somatic embryogenesis · Plant growth regulator · Auxin

Abbreviations
2,4,5-T: 2,4,5-Trichlorophenoxyacetic acid · 2,4-D: 2,4-Dichlorophenoxyacetic acid · MS medium: Murashige and Skoog basal medium · WPM medium: Woody plant medium · PGR: Plant growth regulator · ET: Embryogenic tissue · ABA: Abscisic acid · SAM: Shoot apical meristem · SE: Somatic embryogenesis

Introduction

Received: 6 March 2006 / Revised: 16 July 2006 / Accepted: 11 August 2006 / Published online: 14 September 2006

Received: 6 March 2006 / Revised: 16 July 2006 / Accepted: 11 August 2006 / Published online: 14 September 2006
© Springer-Verlag 2006

Abstract Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE technology in rose. Rose SE technology requires improvement before it can be implemented as a production system on a commercial scale. In the present work, we assessed 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), a synthetic auxin not previously tested in rose, for its effectiveness to induce SE in the rose cultivar 'Livin' Easy' (*Rosa* sp.). We ran a parallel comparison to the commonly used 2,4-dichlorophenoxyacetic acid (2,4-D). We tested each auxin with two different basal media: Murashige and Skoog (MS) basal medium and woody plant medium (WPM). MS medium resulted in somatic embryo production, whereas WPM did not. 2,4,5-T induced SE over a greater concentration range than 2,4-D's and resulted in significantly greater embryo yields. 2,4,5-T at a concentration of 10 or 25 μM was better for embryogenic tissue initiation than 2,4,5-T at 5 μM. Further embryo development occurred when the tissue was transferred to plant growth regulator (PGR) free medium or media with 40% the original auxin concentration. Hence, the PGR-free medium resulted in a tion medium, somatic embryos successfully converted into plantlets at rates ranging from 33.3 to 95.2%, depending on treatment. Survival rates 3 months ex vitro averaged 14.0 and 55.6% for 2,4-D- and 2,4,5-T-derived plantlets, respectively. Recurrent SE was observed in 60.2% of the plantlets growing on germination medium. This study is the first report of SE in the commercially valuable rose cultivar 'Livin' Easy' (*Rosa* sp.) and a suitable methodology was developed for SE of this rose cultivar.

Keywords *Rosa* · Somatic embryogenesis · Plant growth regulator · Auxin

Abbreviations
2,4,5-T: 2,4,5-Trichlorophenoxyacetic acid · 2,4-D: 2,4-Dichlorophenoxyacetic acid · MS medium: Murashige and Skoog basal medium · WPM medium: Woody plant medium · PGR: Plant growth regulator · ET: Embryogenic tissue · ABA: Abscisic acid · SAM: Shoot apical meristem · SE: Somatic embryogenesis

Received: 6 March 2006 / Revised: 16 July 2006 / Accepted: 11 August 2006 / Published online: 14 September 2006
© Springer-Verlag 2006

Abstract Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE technology in rose. Rose SE technology requires improvement before it can be implemented as a production system on a commercial scale. In the present work, we assessed 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), a synthetic auxin not previously tested in rose, for its effectiveness to induce SE in the rose cultivar 'Livin' Easy' (*Rosa* sp.). We ran a parallel comparison to the commonly used 2,4-dichlorophenoxyacetic acid (2,4-D). We tested each auxin with two different basal media: Murashige and Skoog (MS) basal medium and woody plant medium (WPM). MS medium resulted in somatic embryo production, whereas WPM did not. 2,4,5-T induced SE over a greater concentration range than 2,4-D's and resulted in significantly greater embryo yields. 2,4,5-T at a concentration of 10 or 25 μM was better for embryogenic tissue initiation than 2,4,5-T at 5 μM. Further embryo development occurred when the tissue was transferred to plant growth regulator (PGR) free medium or media with 40% the original auxin tion medium, somatic embryos successfully converted into plantlets at rates ranging from 33.3 to 95.2%, depending on treatment. Survival rates 3 months ex vitro averaged 14.0 and 55.6% for 2,4-D- and 2,4,5-T-derived plantlets, respectively. Recurrent SE was observed in 60.2% of the plantlets growing on germination medium. This study is the first report of SE in the commercially valuable rose cultivar 'Livin' Easy' (*Rosa* sp.) and a suitable methodology was developed for SE of this rose cultivar.

Keywords *Rosa* · Somatic embryogenesis · Plant growth regulator · Auxin

Abbreviations
2,4,5-T: 2,4,5-Trichlorophenoxyacetic acid · 2,4-D: 2,4-Dichlorophenoxyacetic acid · MS medium: Murashige and Skoog basal medium · WPM medium: Woody plant medium · PGR: Plant growth regulator · ET: Embryogenic tissue · ABA: Abscisic acid · SAM: Shoot apical meristem · SE: Somatic embryogenesis

Received: 6 March 2006 / Revised: 16 July 2006 / Accepted: 11 August 2006 / Published online: 14 September 2006
© Springer-Verlag 2006

© Springer-Verlag 2006

Abstract Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE technology in rose. Rose SE technology requires improvement before it can be implemented as a production system on a commercial scale. In the present work, we assessed 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), a synthetic auxin not previously tested in rose, for its effectiveness to induce SE in the rose cultivar 'Livin' Easy' (*Rosa* sp.). We ran a parallel comparison to the commonly used 2,4-dichlorophenoxyacetic acid (2,4-D). We tested each auxin with two different basal media: Murashige and Skoog (MS) basal medium and woody plant medium (WPM). MS medium resulted in somatic embryo production, whereas WPM did not. 2,4,5-T induced SE over a greater concentration range than 2,4-D's and resulted in significantly greater embryo yields. 2,4,5-T at a concentration of 10 or 25 μM was better for embryogenic tissue initiation than 2,4,5-T at 5 μM. Further embryo development occurred when the tissue was transferred to plant growth regulator (PGR) free medium or media with 40% the original auxin concentration. However, the PGR-free medium resulted in a tion medium, somatic embryos successfully converted into plantlets at rates ranging from 33.3 to 95.2%, depending on treatment. Survival rates 3 months ex vitro averaged 14.0 and 55.6% for 2,4-D- and 2,4,5-T-derived plantlets, respectively. Recurrent SE was observed in 60.2% of the plantlets growing on germination medium. This study is the first report of SE in the commercially valuable rose cultivar 'Livin' Easy' (*Rosa* sp.) and a suitable methodology was developed for SE of this rose cultivar.

Keywords *Rosa* · Somatic embryogenesis · Plant growth regulator · Auxin

Abbreviations
2,4,5-T: 2,4,5-Trichlorophenoxyacetic acid · 2,4-D: 2,4-Dichlorophenoxyacetic acid · MS medium: Murashige and Skoog basal medium · WPM medium: Woody plant medium · PGR: Plant growth regulator · ET: Embryogenic tissue · ABA: Abscisic acid · SAM: Shoot apical meristem · SE: Somatic embryogenesis

Introduction

Improved somatic embryo maturation in loblolly pine by monitoring

Received: 6 March 2006 / Revised: 16 July 2006 / Accepted: 11 August 2006 / Published online: 14 September 2006
© Springer-Verlag 2006

Abstract Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE technology in rose. Rose SE technology requires improvement before it can be implemented as a production system on a commercial scale. In the present work, we assessed 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), a synthetic auxin not previously tested in rose, for its effectiveness to induce SE in the rose cultivar 'Livin' Easy' (*Rosa* sp.). We ran a parallel comparison to the commonly used 2,4-dichlorophenoxyacetic acid (2,4-D). We tested each auxin with two different basal media: Murashige and Skoog (MS) basal medium and woody plant medium (WPM). MS medium resulted in somatic embryo production, whereas WPM did not. 2,4,5-T induced SE over a greater concentration range than 2,4-D's and resulted in significantly greater embryo yields. 2,4,5-T at a concentration of 10 or 25 μM was better for embryogenic tissue initiation than 2,4,5-T at 5 μM. Further embryo development occurred when the tissue was transferred to plant growth regulator (PGR) free medium or media with 40% the original auxin

tion medium, somatic embryos successfully converted into plantlets at rates ranging from 33.3 to 95.2%, depending on treatment. Survival rates 3 months ex vitro averaged 14.0 and 55.6% for 2,4-D- and 2,4,5-T-derived plantlets, respectively. Recurrent SE was observed in 60.2% of the plantlets growing on germination medium. This study is the first report of SE in the commercially valuable rose cultivar 'Livin' Easy' (*Rosa* sp.) and a suitable methodology was developed for SE of this rose cultivar.

Keywords *Rosa* · Somatic embryogenesis · Plant growth regulator · Auxin

Abbreviations
2,4,5-T: 2,4,5-Trichlorophenoxyacetic acid · 2,4-D: 2,4-Dichlorophenoxyacetic acid · MS medium: Murashige and Skoog basal medium · WPM medium: Woody plant medium · PGR: Plant growth regulator · ET: Embryogenic tissue · ABA: Abscisic acid · SAM: Shoot apical meristem · SE: Somatic embryogenesis

Introduction

Journal
» Plant Cell Reports

Keywords
Rosa

1 Department of Biology, Saint Mary's University, Halifax, Nova

Received: 6 March 2006 / Revised: 16 July 2006 / Accepted: 11 August 2006 / Published online: 14 September 2006
© Springer-Verlag 2006

Abstract Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE technology in rose. Rose SE technology requires improvement before it can be implemented as a production system on a commercial scale. In the present work, we assessed 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), a synthetic auxin not previously tested in rose, for its effectiveness to induce SE in the rose cultivar 'Livin' Easy' (*Rosa* sp.). We ran a parallel comparison to the commonly used 2,4-dichlorophenoxyacetic acid (2,4-D). We tested each auxin with two different basal media: Murashige and Skoog (MS) basal medium and woody plant medium (WPM). MS medium resulted in somatic embryo production, whereas WPM did not. 2,4,5-T induced SE over a greater concentration range than 2,4-D's and resulted in significantly greater embryo yields. 2,4,5-T at a concentration of 10 or 25 μM was better for embryogenic tissue initiation than 2,4,5-T at 5 μM. Further embryo development occurred when the tissue was transferred to plant growth regulator (PGR) free medium or media with 40% the original auxin concentration. However, the PGR-free medium resulted in a tion medium, somatic embryos successfully converted into plantlets at rates ranging from 33.3 to 95.2%, depending on treatment. Survival rates 3 months ex vitro averaged 14.0 and 55.6% for 2,4-D- and 2,4,5-T-derived plantlets, respectively. Recurrent SE was observed in 60.2% of the plantlets growing on germination medium. This study is the first report of SE in the commercially valuable rose cultivar 'Livin' Easy' (*Rosa* sp.) and a suitable methodology was developed for SE of this rose cultivar.

Keywords *Rosa* · Somatic embryogenesis · Plant growth regulator · Auxin

Abbreviations
2,4,5-T: 2,4,5-Trichlorophenoxyacetic acid · 2,4-D: 2,4-Dichlorophenoxyacetic acid · MS medium: Murashige and Skoog basal medium · WPM medium: Woody plant medium · PGR: Plant growth regulator · ET: Embryogenic tissue · ABA: Abscisic acid · SAM: Shoot apical meristem · SE: Somatic embryogenesis

Introduction

Additional Links

Received: 6 March 2006 / Revised: 16 July 2006 / Accepted: 11 August 2006 / Published online: 14 September 2006
© Springer-Verlag 2006

Abstract Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE technology in rose. Rose SE technology requires improvement before it can be implemented as a production system on a commercial scale. In the present work, we assessed 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), a synthetic auxin not previously tested in rose, for its effectiveness to induce SE in the rose cultivar 'Livin' Easy' (*Rosa* sp.). We ran a parallel comparison to the commonly used 2,4-dichlorophenoxyacetic acid (2,4-D). We tested each auxin with two different basal media: Murashige and Skoog (MS) basal medium and woody plant medium (WPM). MS medium resulted in somatic embryo production, whereas WPM did not. 2,4,5-T induced SE over a greater concentration range than 2,4-D's and resulted in significantly greater embryo yields. 2,4,5-T at a concentration of 10 or 25 μM was better for embryogenic tissue initiation than 2,4,5-T at 5 μM. Further embryo development occurred when the tissue was transferred to plant growth regulator (PGR) free medium or media with 40% the original auxin concentration. However, the PGR-free medium resulted in a tion medium, somatic embryos successfully converted into plantlets at rates ranging from 33.3 to 95.2%, depending on treatment. Survival rates 3 months ex vitro averaged 14.0 and 55.6% for 2,4-D- and 2,4,5-T-derived plantlets, respectively. Recurrent SE was observed in 60.2% of the plantlets growing on germination medium. This study is the first report of SE in the commercially valuable rose cultivar 'Livin' Easy' (*Rosa* sp.) and a suitable methodology was developed for SE of this rose cultivar.

Keywords *Rosa* · Somatic embryogenesis · Plant growth regulator · Auxin

Abbreviations
2,4,5-T: 2,4,5-Trichlorophenoxyacetic acid · 2,4-D: 2,4-Dichlorophenoxyacetic acid · MS medium: Murashige and Skoog basal medium · WPM medium: Woody plant medium · PGR: Plant growth regulator · ET: Embryogenic tissue · ABA: Abscisic acid · SAM: Shoot apical meristem · SE: Somatic embryogenesis

Introduction

© Springer International Publishing AG, Part of Springer Science+Business Media · Privacy Policy · Disclaimer · Terms & Conditions
Not logged in · US PATENT & TRADEMARK OFFICE ATTN: BARBARA MCDOUGALD (8200808146) · 151.207.250.51

Like 435

Rosa 'Livin Easy' (Livin Easy Floribunda Rose)

Botanical Information

Family	Rosaceae
Genus	*Rosa*
Cultivar	'Livin Easy'
Category	Woody
Type	Shrub (deciduous)
Origin	Harkness, 1992.

Details

USDA Hardiness Zone	6a-10b
USDA Hardiness Ref.	
Canada Hardiness Ref.	
RHS Hardiness Ref.	
Height	1 m
Growth	Medium
Flowering Period	June, July, August, September

Photographs

Description and Growing Information

Notable Specimens	Niagara Parks Botanical Gardens, Niagara Falls, Ontario, Canada.
Habitat	Horticultural origin
Leaf Description	Medium, glossy, olive green foliage.
Flower Description	Apricot to apricot blend, 25 - 30 petals per bloom, with a moderate sweet citrus fragrance.

Awards

© 2015 Michael Pascoe • Administration • Web Development by Johnny Rodgers & Kyle Ledermann • Credits
Like 435

ResearchGate

Already a member? Log in

Zhongmin Dong
St. Mary's University

Article

2,4,5-Trichlorophenoxyacetic acid promotes somatic embryogenesis in the rose cultivar "Livin' Easy" (Rosa sp.).

Tammy Estabrooks | Robin Browne | Zhongmin Dong

Department of Biology, Saint Mary's University, Halifax, Nova Scotia, Canada.

Plant Cell Reports (Impact Factor: 2.94). 03/2007; 26(2):153-60. DOI: 10.1007/s00299-006-0231-5
Source: PubMed

ABSTRACT Somatic embryogenesis (SE) offers vast potential for the clonal propagation of high-value roses. However, some recalcitrant cultivars unresponsive to commonly employed SE-inducing agents and low induction rates currently hinder the commercialization of SE

0 FOLLOWERS · 110 VIEWS

CITATIONS (60) CITED IN (10)

Article: An efficient system to produce transgenic plants via cyclic leave-originated secondary somatic embryogenesis in Rosa rugosa

Request full-text

SIMILAR PUBLICATIONS

In Vitro plant regeneration of Aster scaber via somatic embryogenesis
Kyung Hwan Boo, Dang Viet Cao, Reniel S Pamplona, Doseung Lee, Key-Zung Riu, Dong-Sun Lee

Clonal fidelity of Iris sibirica plants regenerated by somatic embryogenesis and organogenesis in leaf-base culture — RAPD and flow cytometer analyses
M. Stanišić, M. Raspor, S. Ninković, S. Milošević, D. Ćalić, B. Bohanec, M. Trifunović, M. Petrić, A. Subotić, S. Jevremović

Somatic embryogenesis and in vitro plantlet regeneration in Salicornia brachiata Roxb.
Mangal S. Rathore, Nikita Palwal, K. G. Vijay Anand, Pradeep K. Agarwal

Wen Xing, Ying Bao, Ping Luo, Manzhu Bao, Guogui Ning

[Show abstract]

Acta Physiologiae Plantarum 08/2014; 36(8):2013-2023.
DOI:10.1007/s11738-014-1575-9 · 1.52 Impact Factor

Article: **Morphohistological analysis of the origin and development of Rosa canina protocorm-like bodies**

Feng-Luan Liu, Isak Abdurazak, Lin Xi, Bin Gao, Ling Wang, Chuan-Wei Tian, Liang-Jun Zhao

[Show abstract]

Scientia Horticulturae 03/2014; 167:107–116.
DOI:10.1016/j.scienta.2014.01.001 · 1.58 Impact Factor

Article: **Efficiency of direct and indirect shoot organogenesis in different genotypes of Rosa hybrida**

Leila Pourhosseini, Maryam Jafarkhani Kermani, Ali Akbar Habashi, Ahmad Khalighi

[Show abstract]

Plant Cell Tissue and Organ Culture 01/2012; 112(1).
DOI:10.1007/s11240-012-0210-1 · 2.61 Impact Factor

Show more

Data provided are for informational purposes only. Although carefully collected, accuracy cannot be guaranteed. The impact factor represents a rough estimation of the journal's impact factor and does not reflect the actual current impact factor. Publisher conditions are provided by RoMEO. Differing provisions from the publisher's actual policy or licence agreement may be applicable.

© 2008-2015 researchgate.net. All rights reserved.

About us · Contact us · Developers · News · Privacy · Terms

Scientific Research
An Academic Publisher
OPEN ACCESS
Journal
Search Title,Keywords,Author,etc.

Home | Articles | Journals | Books | Conferences | Services | Blog | Submit

Browse Menu >>
Journals by Subject
Journals by Title

Browse Subjects >>
Biomedical & Life Sciences
Business & Economics
Chemistry & Materials Science
Computer Science & Communications
Earth & Environmental Sciences
Engineering
Medicine & Healthcare
Physics & Mathematics
Social Sciences & Humanities

Information for Authors
Paper Submission
Manuscript Tracking System
Join Peer-Review Program
Free SCIRP Newsletter
Call for Special Issue Proposals

Connect with SCIRP >>

2,4,5-Trichlorophenoxyacetic acid promotes somatic embryogenesis in the rose cultivar 'Livin'Easy'(Rosa sp.)

AUTHORS: *Zhongmin Dong*

KEYWORDS: rosa, somatic embryogenesis, plant growth regulator, auxin
JOURNALNAME: **Plant Cell Reports**

Related open access articles

Open Access
Advances in Somatic Embryogenesis Research of Horticultural Plants
American Journal of Plant Sciences Vol.2 No.6, December 5, 2011
Aiqing Ji, Xueqing Geng, Yan Zhang, Guoliang Wu
Full-Text PDF | Full-Text HTML | Downloads: 3387
DOI: 10.4236/ajps.2011.26087 | Google Scholar | Open Access Library

Open Access
Effect of Time, Cultivar and Rootstock on Success of Rose Propagation through Stenting Technique
American Journal of Plant Sciences Vol.5 No.11, May 20, 2014
Zeinab Izadi, Hossein Zarei, Mahdi Alizadeh
Full-Text PDF | Full-Text HTML | Downloads: 549
DOI: 10.4236/ajps.2014.511178 | Google Scholar | Open Access Library

Open Access
In Vitro Somatic Embryogenesis in Some Oil Yielding Tropical Tree Species
American Journal of Plant Sciences Vol.2 No.2, June 27, 2011
Premananda Das
Full-Text PDF | Full-Text HTML | Downloads: 2270
DOI: 10.4236/ajps.2011.22023 | Google Scholar | Open Access Library

Open Access
Plant Regeneration Through Indirect Somatic Embryogenesis in Coelogyne Cristata Orchid
American Journal of Plant Sciences Vol.2 No.2, June 30, 2011

Contact Us >>

customer@scirp.org
Text Contact
Voice Contact
+1-209-266-2606
UTC: 00:30 - 09:30
1655362766

Aung Htay Naing, Jae Dong Chung, Ki Byung Lim
Full-Text PDF Full-Text HTML Downloads: 3448
DOI: 10.4236/ajps.2011.22028 Google Scholar Open Access Library

Open Access

Role of Grafting Technique on the Success of Stenting Propagation of Two Rose (*Rosa* sp.) Varieties
American Journal of Plant Sciences Vol.4 No.5A, May 30, 2013
Z. Izadi, H. Zarei, M. Alizadeh
Full-Text PDF Full-Text HTML Downloads: 1224
DOI: 10.4236/ajps.2013.45A006 Google Scholar Open Access Library

Open Access

Histological analysis and transcription profiles on somatic embryogenesis in interspecific hybrids of *Elaeis guineensis* × *E. oleifera*
Agricultural Sciences Vol.4 No.11A, November 28, 2013
Paula Cristina da Silva Angelo, Douglas André Steinmacher, Ricardo Lopes, Raimundo Nonato Vieira da Cunha, Miguel Pedro Guerra
Full-Text PDF Full-Text HTML Downloads: 897
DOI: 10.4236/as.2013.411A001 Google Scholar Open Access Library

Open Access

Efficient Somatic Embryogenesis and Organogenesis of Self-Pollination Artemisia annua Progeny and Artemisinin Formation in Regenerated Plants
American Journal of Plant Sciences Vol.4 No.11, November 14, 2013
Fatima Alejos-Gonzales, Kelly Perkins, Malcolm Isaiah Winston, De-Yu Xie
Full-Text PDF Full-Text HTML Downloads: 954
DOI: 10.4236/ajps.2013.411274 Google Scholar Open Access Library

Open Access

In Vitro Regeneration of Curcuma caesia Plantlets from Basal Part and via Somatic Embryogenesis
Advances in Bioscience and Biotechnology Vol.5 No.4, March 12, 2014
Ab. Rahman Zuraida, Kamaruddin Fatin Liyana Izzati, Othman Ayu Nazreena, Che Mohd Zain Che Radziah, Sheikh Ghadzi Siti Nur Asyikin, Subramaniam Sreeramanan
Full-Text PDF Full-Text HTML Downloads: 862
DOI: 10.4236/abb.2014.54044 Google Scholar Open Access Library

Open Access

Macronutrients Effect on Secondary Somatic Embryogenesis of Moroccan Cork Oak (Quercus suber L
American Journal of Plant Sciences Vol.5 No.13, June 6, 2014
Ben Ali Naouar, Lamarti Ahmed
Full-Text PDF Full-Text HTML Downloads: 616
DOI: 10.4236/ajps.2014.513199 Google Scholar Open Access Library

Offline - Leave a me...
Offline - Leave a me...

Open Access

Somatic Embryogenesis and Organogenesis for Regeneration of Endangered Multipurpose Desert Plant Leptadenia pyrotechnica Forsk. Decne in the Kingdom of Bahrain

American Journal of Plant Sciences *Vol.5 No.15, July 10, 2014*

Manal Ahmed Sadeq, Malabika Roy Pathak, Ahmed Ali Galih, Mohammed Abido, Asma Abahussein

Full-Text PDF **Full-Text HTML** **Downloads: 619**

DOI: *10.4236/ajps.2014.515248* Google Scholar Open Access Library

Open Access

Oxidative Stress Responsive SERK1 Gene Directs the Progression of Somatic Embryogenesis in Cotton (Gossypium hirsutum L. cv. Coker 310

American Journal of Plant Sciences *Vol.5 No.1, January 13, 2014*

Dhananjay K. Pandey, Bhupendra Chaudhary

Full-Text PDF **Full-Text HTML** **Downloads: 1308**

DOI: *10.4236/ajps.2014.51012* Google Scholar Open Access Library

Open Access

Is the Photosuturing Agent, Rose Bengal, a Mutagen

Journal of Cosmetics, Dermatological Sciences and Applications *Vol.4 No.1, January 28, 2014*

Lindsey Hunter-Ellul, Shuguang Wang, Jeffrey Wickliffe, Michael Wilkerson

Full-Text PDF **Downloads: 597**

DOI: *10.4236/jcdsa.2014.41004* Google Scholar Open Access Library

Open Access

Large-Scale Production of Microalgal Lipids Containing High Levels of Docosahexaenoic Acid upon Fermentation of Aurantiochytrium sp. KRS101

Food and Nutrition Sciences *Vol.4 No.9A, August 21, 2013*

Won-Kyung Hong, Anna Yu, Baek-Rock Oh, Jang Min Park, Chul Ho Kim, Jung-Hoon Sohn, Akihiko Kondo, Jeong-Woo Seo

Full-Text PDF **Full-Text HTML** **Downloads: 1136**

DOI: *10.4236/fns.2013.49A1001* Google Scholar Open Access Library

Open Access

The effects of neem [Azadirachta indica A. Juss (meliaceae)] oil on Fusarium oxysporum f. sp. medicagenis and Fusarium subglutinans and the production of fusaric acid toxin

Advances in Bioscience and Biotechnology *Vol.1 No.1, April 22, 2010*

Marcia Regina Ferreira Geraldo, Carla Cristina Arroteia, Carlos Kemmelmeier

Full-Text PDF **Full-Text HTML** **Downloads: 2557**

DOI: *10.4236/abb.2010.11001* Google Scholar Open Access Library

Open Access

Observation on Poterioochromonas sp. (Chrysophyte

Journal of Water Resource and Protection *Vol.2 No.6, June 30, 2010*

Shengjuan Guo, Lirong Song

Full-Text PDF **Full-Text HTML** **Downloads: 1630**

Offline - Leave a me...

Offline - Leave a me...