

BOOK OF ABSTRACTS

3rd International Conference on Plant Biology (22nd SPSS Meeting)



9-12 JUNE 2018
BELGRADE

Serbian Plant Physiology Society

Institute for Biological Research "Siniša Stanković", University of Belgrade

Faculty of Biology, University of Belgrade

**3rd International Conference
on Plant Biology
(22nd SPPS Meeting)**



9-12 June 2018, Belgrade

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CIP - Каталогизacija у публикацији - Народна библиотека Србије, Београд
581(048)(0.034.2)

INTERNATIONAL Conference on Plant Biology (3 ; 2018 ; Belgrade)

[Book of Abstracts] [Електронски извор] / 3rd International Conference on Plant Biology [and] 22nd SPPS Meeting, 9-12 June 2018, Belgrade ; [organized by] Serbian Plant Physiology Society [and] Institute for Biological Research "Siniša Stanković", University of Belgrade [and] Faculty of Biology, University of Belgrade ; [editor Branka Uzelac]. - Belgrade : Serbian Plant Physiology Society : University, Institute for Biological Research "Siniša Stanković" : University, Faculty of Biology, 2018 (Beograd : Друштво за физиологију биљака Србије). - 1 USB fleš memorija ; 1 x 3 x 8 cm

Тираж 230. - Регистар.

ISBN 978-86-912591-4-3 (SPPS)

1. Друштво за физиологију биљака Србије. Састанак (22 ; 2018 ; Београд)

2. Институт за биолошка истраживања "Синиша Станковић" (Београд)

а) Ботаника - Апстрактни

COBISS.SR-ID 264421900

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<u>Publishers</u>	Serbian Plant Physiology Society Institute for Biological Research "Siniša Stanković", University of Belgrade Faculty of Biology, University of Belgrade
<u>Editor</u>	Branka Uzelac
<u>Graphic design</u>	Dejan Matekalo
<u>Prepress</u>	Marija G. Gray
<u>Electronic edition</u>	230 pcs

Potassium iodide promotes bud regeneration from the apical root sections of shallot plants

PP1-29

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The apical root sections of *Allium ascalonicum* plants respond to a callus inducing treatment by forming callus from the root apical meristem. It has been shown in *Arabidopsis thaliana* that balance between superoxide and hydrogen peroxide (H₂O₂) in the root tip determines root meristem size by controlling the transition from cell proliferation to differentiation. Hence, the increased size of root meristem may affect callus formation and subsequent bud regeneration from the root-tips. To test this hypothesis, *in vitro*-grown shallot plants were pretreated with aqueous solutions of H₂O₂ (100, 500 or 1000 μM) or potassium iodide (KI, 1 or 10 mM) for 24h. Plants incubated in water were used as a control. The apical root sections (1 cm) isolated from these plants were cultivated on callus induction medium, supplemented with 5 μM 2,4-D + 5 μM BA, for 8 weeks and then on regeneration induction medium, containing 5 μM BA, for 4 weeks. Obtained results indicate the significant impact of KI on *de novo* bud regeneration. Explants treated with 1 mM KI regenerated buds with significantly higher frequency (83.6% vs. 25.2%) and the mean bud number (6.19 vs. 0.21) compared to the control. The frequencies of bud regeneration and the mean bud numbers obtained for H₂O₂-treated explants were significantly lower compared to KI-treated explants (43.5% 52.0% and 1.0-2.3, respectively). Assuming that H₂O₂ decreases size of the root meristem, as was shown in *Arabidopsis*, the results obtained in this work suggest that KI, a H₂O₂ scavenger, increased bud-forming capacity presumably by increasing the size of root meristem.

Keywords: *Allium ascalonicum*, bud regeneration, hydrogen peroxide, potassium iodide, shallot

Ministry of education, science and technological development of the Republic of Serbia supported this work through Grant No. 173015, and a grant given to Maja Milić (Grant No. 451-03-1629/2017/2138).

Combination of high sucrose concentration with exogenous cytokinins affects endogenous phytohormone profiles of kohlrabi seedling explants during *de novo* organogenesis

PP1-30

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Fluctuations in local phytohormone levels are considered to be important for initiation of developmental events in the process of plant organogenesis. Simultaneously, sugars as signaling molecules affect plant metabolism and growth, potentially interacting with hormonal regulation. Thus, the aim of the presented study was to see whether there were any changes in cytokinin (CK) homeostasis in 4 different stages (T1-T4) during *de novo* shoot organogenesis of kohlrabi (*Brassica oleracea* var. *gongyloides* cv. Vienna Purple) seedlings under the influence of exogenous CKs, *trans-*