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Effect of Benzyladenine(BA) on Micropropagation of Acacia (*Robinia pseudoacacia* L.)

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ABSTRASCT

Acaciaisabeautifulornamental treewhich is widelyusedin parks and landscape designs.To evaluate the effect of benzyladenine on improving micropropagation of acacia,a randomized complete block design with four levels, 0, 0.5, 1 and 1.5 mgl^{-1}in threereplications. Analysis of varianceindicatedthat the effectof benzyladenineon all measured traits were statistically significantatthe 1% probability level.Mean comparisonshowed thattreatmentwith1 mglbenzyladeninehad the priority to all traits with 3.6 (the maximum nods number), 5.03 cm (the maximum seedling height) , 3.35(the most shoots number) and1.72g (fresh weight).

Keywords:acacia, micropropagation, fresh weight, shoots number.

INTRODUCTION

Acacia (*Robinia pseudacacia* L.) belongs to Fabaceae family which are ornamental plants. [15]. Acacia belongs to Fabaceae family and it shows that ecodormancy and outer impermeable shell are the two factors which causes dormancy in it's seeds [4, 5]. This phenomenonreduced thegerminationrateofseedand ultimatelyreducethe efficiencyof theseeds per surface unit, which eventuallyleadstoproduction loss [4, 14] Additionally, in *in vitro*culture, the lackof adequateplant growth regulatorsandproper culture mediainterrups the production andpropagationunits [12, 14]. Cytokinins are a group ofcompoundsthat controlcell division, changes inapical dominance, shoots differentiation in plants.Intheplanttissueculture, cytokinins mostly participate in cell division andmainly inadventitious shootsdifferentiation from callus and othe plant tissues.This compounds also causes shoots proliferationdue to remove the apical dominance [10, 13]. Use of thesecompoundsinplanttissueculture, both alone or in combinationwith otherplantgrowth regulators, especiallyauxins, is common [10]. Boltenkov & Zarembo (2005) reported that in *invitro*cultivation ofiris(*Iris* spp.),shoots directformationfromexplantsandcallusculturedepends onthespeciesand plantgrowth regulatorscontent**.** This study is about investigatethe effect of benzyladenineonindicatorsrelated tomicropropagationofacacia.

MATERIALS AND METHODS

In recent study, acacia seed was obtained from Amol city and solidified medium and the woody plants media were used. The emberyonic axis was used as explant as well which had been sterilized before the experiment and finallywashedwith70% ethanolandweredisinfected. The study was performed based on a complete randomized design with four levels of BA (0, 0.5, 1 & 1.5 mgl^{-1}) in 3 replications with 12 plots and 5 explants per plot.. The measured traits were the number of branches, fresh weight, number of nods and seedlingds height. Number of shootsandnumber of nodswereobservationally recordedat the 30'th of examination. Fresh weight was measured

using the digital balance. Seedlingheightwas measuredwitha rulerat the end of the experiment. Data was statistically analyzed using SPSS software and mean comparisons was done according to LSD test.

RESULTS AND DISCUSSION

Analysis of varianceshowed that theeffect ofbenzyladenine treatmentsonallmeasured parametersmeasuredwere statistically significantatthe 1% probability level.Mean comparisonshowed thattreatmentwith1 mglbenzyladenine had the priority to all traits with 3.6 (the maximum nods number), 5.03 cm (the maximum seedling height) , 3.35 (the most shoots number) and1.72g (fresh weight) (Table 1).Becauseitstimulatesgrowthandcell division andsynergic organdevelopment andtheir growth, and also increasein plantbiomassas well[1, 10]. Ayan et al. (2005) reportedthat the maximumfresh weight ofcallusis achieved in treatmentscontaining 1mgl^{-1}Kinetin and1mgl^{-1}NAAinHypericum(*Hypericum perforatum*). Our resultsare also in accordance with theresults Kanwar et al(2009)about theeffect ofplant growth regulators(NAA)andbenzylaminoporineon protoplast fresh weight yield inacacia(*Robinia pseudocaci*). Ahmadi Hesar et al.(2011)showed thepositive effectof 1mgl^{-1} plant growth regulators (NAA & Kin) on thestock's number of nodes.Ourresultson the effect ofplant growth regulators (auxinandcytokinin) is in close agreement to Hepaskov & Aksoy (2006)on thefig, and also with Kavitha et al. (2012).Robinsonet al(2005)reported that the maximum shoot proliferation in (*Punnica granatum* L.)was obtained in 0.75 and 0.01 mgl^{-1} auxin and cytokinin concentrations. Maghsoudi et al.(2011)in a studyon*Lippia citriodora*reported the positive impactof indoleacetic acidandbenzyladenineon regenerative plant growth.Also, our results about thepositive effectof plantgrowth regulatorsonplant's regenerativegrowth parametersin *invitro*culture,is in accordance withresults ofGumuscu et al.(2008)about theeffect ofplant growth regulatorsonmicropropagationimprovementand growth's relevantindicators.Thisstudy showed that1mgl^{-1}benzyladenineincreasedgrowth parameters*invitro*cultureof acacia.

Table 1. Comparison the effect of benzyladenine different levels on fresh weight, seedlings height,shoots number and nods number of acacia (*Robinia pseudacacia* L.)

Treatment	Fresh weight (g)	Seedlings height (cm)	Shoots number	Nods number
B_1(control)	0.40d	1.23d	0.98d	2.3d
B_2 (0.5 mgl^{-1})	0.91c	2.7c	1.63c	4.0c
B_3(1 mgl^{-1})	1.72a	5.03a	3.53a	6.3a
B_4(1.5 mgl^{-1})	1.16b	3.42b	2.5b	4.6b

**According to LSD test, in each column, means with the same letters are not significantly different.*

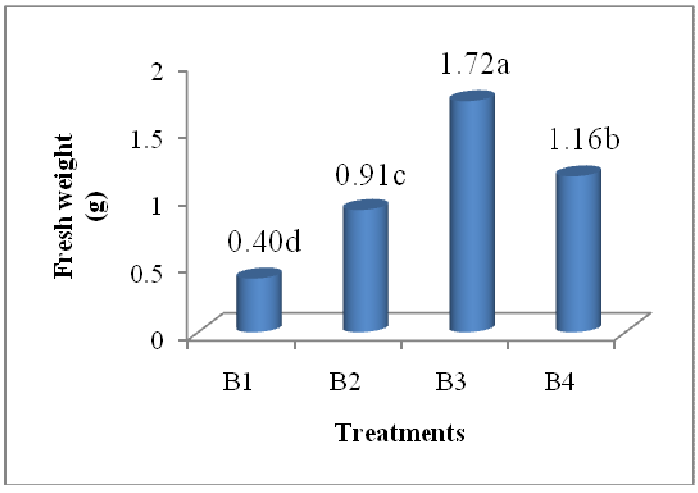

Fig 1- Effect of different benzyladenine levels on fresh weight of acacia seedlings.

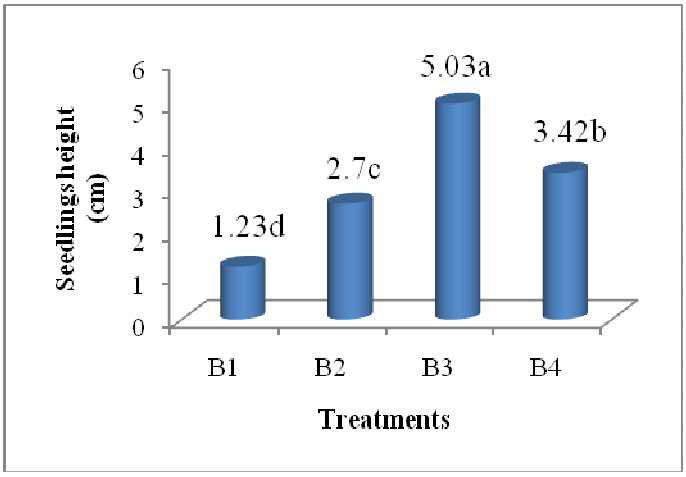

Fig. 2. Effect of different benzyladeninelevels on seedlings height of acacia.

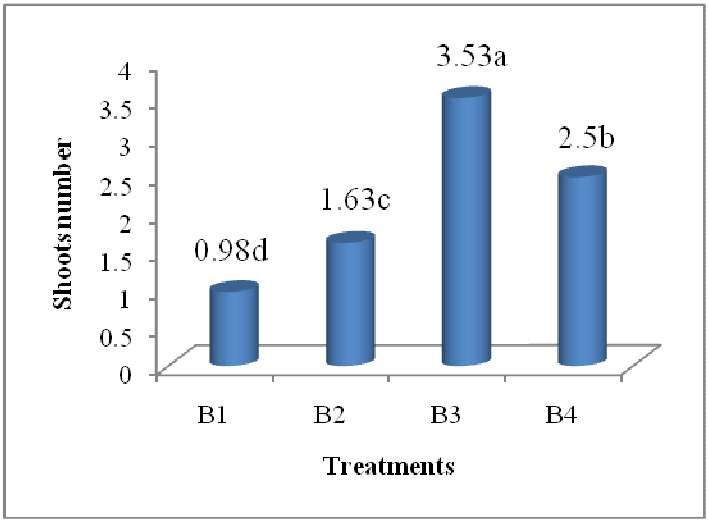

Fig. 3. Effect of different benzyladeninelevels on shoots number of acacia.

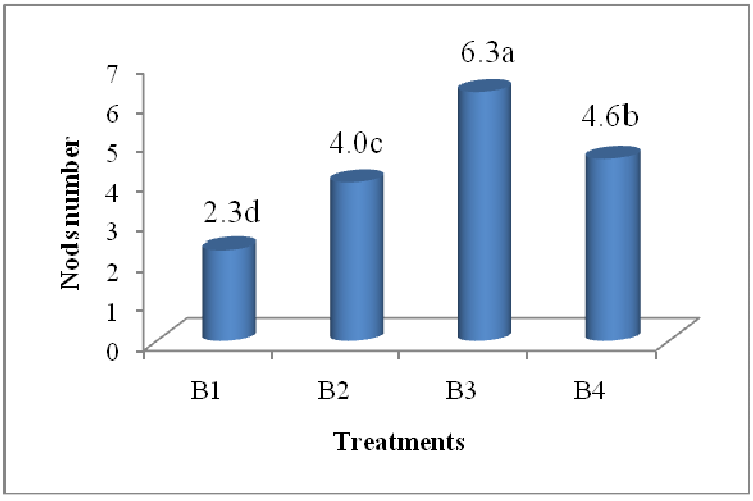

Fig. 4. Effect of different benzyladeninelevels on nodes number of acacia.

REFERENCES

[1] Ahmadi Hesar, A., Kaviani, B., Hashemabadi, D., Bohlooli Zanjani, S., Ansari, M.H. **2011**. *J. Ornament. Hortic*. Plants., 1(3): 129-136.

[2] Ayan, A.K., Cirak, C., Kerserolu, K., Sokmen, K. **2005**. *Turkish J. Agric*., 29: 197-204.
[3]Boltenkov, E.V. and Zarembo, E.V. **2005**. *Biology Bulletin. 32 (2): 138-142.*
[4] . Cox. R.A., Klett, J.E. **1984**. *Plant Propag*., 30(2) :6-10.
[5] Fathi, G.H., Esmaeilpour, B. 2000. Ferdowsi University Publication. Mashhad, Iran., 288pp
[6] Gumuscu, A., Cocu, S., Uran Bey, S., Ipel, A., Caliskan, M., Arslan, N. **2008**. *African Journal of Biotechnology., 7(3): 234-238.*
[7] Hepaksoy, S., Aksoy, U. **2006**. *Biologia Plantarum*.,. *50: 433-436.*
[8] Kanwar, K., Bhardwaj, A., Deepika, R. **2009**. *Plant. Cell. Tiss. Organ. Cult., 96: 95-103.*
[9] Kavitha, M.S., Wesely, E.G., Mehalingam, P. **2012**. *Journal of Ornamental and Horticultural Plants., 2(2): 65-72.*
[10] Khoshkhoui, M. **2010**. *Shiraz University Press., Vol 1.*
[11] Maghsoudi, M., Bahlouli Zanjani, S., Ramezani Sayyad, A. **2011**. *Proceedings of the Seventh International Congress of Iranian Horticultural Science. Pages., 197to 199.*
[12] Mohanty, S., Panda, M.K., Sahoo, S. Nayak, S. **2001**. *Biological Planta.* 55(1): 16-20.
[13] Robinson, R., Bimlendra, K., Beniwal, S.V. **2005**. *Plant Physiol., 10: 372-376.*
[14] Zarchini, M., Hashemabadi. D., Kaviani, B., Rafiee Fallah Abadi, P., Negahdar, N. **2011**. *Plant. Omics J. 4(7): 350-353.*
[15] Zhang J., Liu, Y., Wang, H. **2007**. *Book Capter., pp 193-199.*