Effect of Medium and Different Hormone Combinations on Regeneration of Shoots and Morphological Changes in Strawberry Mericlones

Mozafari[1]*, A. A. and Bahramejad[2], B.

Abstract

In this study the effect of four growth media including MS, NN, B5 and AM and three different hormone combinations were investigated on regeneration of two strawberry cultivars Camarosa and Selva. The experiment was done in factorial design for each cultivar separately. The meristem explants were introduced in culture media supplemented with different hormonal combinations and maintained in a growth room at a 16h photoperiod (36 $\mu mol.m^{-2}.s^{-1}$), 25 ± 1ºC. After ten weeks, number of regenerated plantlets, biggest leave length, middle leaflet length and width, middle petiolate length, number of dent in middle leaflet and root length were studied. The results showed that number of regenerated shoots were higher in MS and NN medium. Hormonal combinations B1:(BA=1.0ppm+IBA=0.05ppm+GA_3=0.05)and B2:(Kinetin=5ppm+2,4-D = 0.5 ppm + GA_3 = 0.05ppm) were also resulted in higher regeneration number compared to B3. The results showed that Camarosa were more stable and had a higher regeneration in miropropgation process based on morphological traits.

Keyword: Strawberry, Medium, Micropropagation, Meristem culture

Refrevces

MOZAFARI A. A. 2006. Descriptor of Fruits. Universityof Kurdistan Press.536 pp.

BOXUS, P., JEMALI, A., TERZI, J.M. and AREZKI, O. 2000. Drift in genetic stability in micropropagation: the case of strawberry. Internatunal Symposium and Markers for Quality Assurance in Micripropagation. ISHS Acta Hort. 530. Number of articles, 55. Volumes, 1. cork, Ireland.

BOXUS, P. and LARROR, P. 1987. *In vitro* culture of strawberry plants. 1th ed., Commission of the Euripean Communities. Office of Water, EPA-823-R-98-001, 100 pp.

BOXUS, P. 1984. Assainisement des arbers fruitieres et du fraisier par culture de eristems. Parasitica., 40:139-154.

DZIADCZYK, P., BOLIBOK, H., TYRKA, M. and HORTYŚKI, J. A. 2003. *In vitro* selection of strawberry (*Fragaria × ananassa* Duch.) clones tolerant to salt stress. Euphytica 132: 49–55.

DIMENKO, V. E. and KRIOCHKOVA, V. A. 2002. Adaptation of regenerated plants to non-strile conditions. Moscow K.A. Timiryazev Aca. of Agri. Sci.

JEMMALI, A., ELLOUMI, N. and KEVERS, C. 2002. Vegetative and generative behavior of strawberry (*Fragaria× ananassa* Duch) plants rose from *in vitro* regeneration of axillary or tipular buds, Acta Botanical. Gallica, 149: 395–404.

JONES, O. P., WALLER, B. J. and BEECH, M. G. 1988. The production of strawberry plants from callus culture. Plant Cell Tissue and Organ Culture. 12: 235-241.

GAMBORG, O. MILLER R. and OJIMA, K. 1968. Nutrient requirement of suspension cultures of soybean root cells. Exp. Cell Res. 50, 150–158.

HAMMERSCHLAG, F., GARCÉS, S., KOCH-DEAN, M., RAY, S., LEWERS, K., MAAS, J. and SMITH, B. J. 2006. *In vitro* response of strawberry cultivars and regenerants to *Colletotrichum acutatum*. Plant Cell Tissue and Organ Culture. 84: 255–261.

KARP, A., 1995. Somaclonal variation as a tool for crop improvement. Euphytica. 85:295-302.

LIU, Z. R. and SANFORD J. C. 1988. Plant regeneration by organogenesis from strawberry leaf and runner tissue. HortScience 23: 1057-1059.

MOHAN, B., KUMAR, REED, E., BARKER and BARBARA, M. REED. 1999. Morphological and molecular analysis of genetic stabilityin Micropropagation Fragaria X ananassa cv. Pocahontas. *In Vitro* Cell. Dev. Biol. Plant. 35: 254-256.

1. Assistant prof. Department of Horticulture, Faculty of Agricultur, University of Kurdistan.

2. Assistant prof. Department of Agronomy and Plant Breeding, Faculty of Agriculture, University of Kurdistan.

∗: Corresponding author

MOZAFARI, A. A. and GOVAOROVA, G. F. 2005. Optimization of micro propagation of new strawberry cultivares, Izvestia TCXA. 64: 454-457.

MOZAFARI, A. A. and A. K. KOSTIN. 2004. Ability to produce of new strawberry hybrid plants and somaclons. Izvestia TCXA. 58: 69-75.

MOZAFARI, A. A. 2004. Variation of morphological and physiological characteristics of strawberry genotypes in terms of introduction into culture in conditions.12Th Iranian Researchers Conference in Europe (IRCE). Liverpool. 2004. P. 89. (Abst.)

MOZAFARI, A. A. 2003. Results comparisonal studies morphological characters of strawberry from meristem. Proceedings of Scientific, Moscow, 127: 452-457.

MOROZOVA, T. T. 2000. Changes in environmental conditions for strawberry plants (*Fragaria vesca* L.) producted by *in vitro* methods. Vavilov Institut. 1: 118-125.

MURASHIGHE, T. and SKOOG F. A. 1962. A revised medium for rapid growth and bio-assays with tobacco tissue culture. physiol. Plant, 15: 473-497.

NARANDER, S., NEHARA, N. S., KUTTY, K. KARTHA, CECIL STUSHNOFF and KENNETH, L. GILES. 1992. The infloence of plant growth regolator concentration and callus age on somaclnal variation in callus regeneration of strawberry. Plant Cell Tissue and Organ Culture. 29: 257-268.

NITSCH, J. P. and C. NITSCH. 1956. Studies on the growth of coleoptile and first internode sections. A new, sensitive, straight-growth test for auxins. Plant Physiol. 31: 94-111.

RASTORGOEVE C. L. and TIOLENEVE, V. M. 1995. Regeneration of strawberry plants from somaclonal variations. Concept and Method of Reasrch. 58: 50-57.

RUGIENIUS, R. and STANYS, V. 2001. *In vitro* screening of strawberry plants for cold resistance. Euphytica 122:269–277.

SANSAVINI, S., ROSATI, P., GAGGIOLI, D., and TOSHI, M. F. 1990. Inheritance and stability of somaclonal variation in micropraпropagated strawberry. Acta. Hort. 280: 375- 384.

SANSAVINI, S., ROSATI, P., GAGGIOLI, D. and TOSCHI, M. F. 1998. Inheritance and stability of somaclonal variations in micropropagation strawberry. TSHS. ACTA Horticulture I International Symposium On *in vitro* Culture and Horticultural Breeding. 280: 179-182.

SINGH, A. K., DUBEY, A. K. and VIBHA, D. 2004. Phenotipic stability of *in vitro* regenerated plants of strawberry (*Fragaria x ananassa.* Duch.). Progressive Horticulture. 36 (1): 5-7.

SHEGLOVE, C. N. 1997. Morphological changes of strawberry cultivars. 1th ed., Krasnodar. 19 p.

SOWIK, I., BIELENIN, A. and MICHALCZUK. R. 2001. *In vitro* testing of strawberry resistance to *Verticillium dahliae* and *Phytophthora cactorum*. Scientia Horticul- turae. 88:31–40.

TIOLENEVE, V. M. 1993. Regeneration of frout crops from somatic tissues. 1th ed., Pushino. 173 p.

TIOLENEVE, V. M. 1996. Induction of morphogenesis and selection of frouts and small fruits (Resrch and Methods). 1th ed., Michorinsk. 74 p.

To look at the figures and tables, please refer to the Persian text (pages: 17-27= 17-27).