

**EFFICIENT SOMATIC EMBRYOGENESIS FROM IMMATURE INFLORESCENCES OF
DALLISGRASS (*PASPALUM DILATATUM* POIR.)**

Süleyman Avcı^{1*} and Ersin Can²

¹Institute of Biotechnology, Department of Field Crops, Faculty of Agriculture, University of Ankara,
06110, Dışkapı, Ankara, Turkey

*Tel.: 90-312-596 15 39, *Fax: 90-312-317 98 15, *E-mail: kmkhawar@gmail.com

²Department of Field Crops, Faculty of Agriculture, Mustafa Kemal University, 31034 Hatay, Turkey

REFERENCES

- Akashi R., Adachi T. (1992a). Plant regeneration from suspension culture-derived protoplast from apomictic dallisgrass (*Paspalum dilatatum* Poir.). *Plant Science*, 82: 219-225.
- Akashi R., Adachi T. (1992b). Somatic embryogenesis and plant regeneration from cultured immature inflorescences of apomictic dallisgrass (*Paspalum dilatatum* Poir.). *Plant Science*, 82: 213-218.
- Akashi R., Hashimoto A., Adachi T. (1993). Plant regeneration from seed-derived embryogenic callus and cell suspension cultures of bahiagrass (*Paspalum notatum*). *Plant Science*, 90: 73-80.
- Arockiasamy S., Ignacimuthu S. (1999). High frequency regeneration of plantlets from mature embryo explants *Paspalum scrobiculatum* L., an important millet. XVI International Botanical Congress Abstract Number: 3957 Poster No. 1627.
- Bovo O. A., Mroginski L. A. (1986). Tissue culture in *Paspalum* (*Graminaea*): Plant regeneration from cultured inflorescences. *Journal of Plant Physiology*, 124: 481-492.
- Bovo O. A., Mroginski L. A. (1989). Somatic embryogenesis and plant regeneration from cultured mature and immature embryos of *Paspalum notatum* (*Gramineae*). *Plant Science – Limerick*, 65: 217-223.
- Burson B. L., Bennett H. W. (1970). Cytology and reproduction of three *Paspalum* species. *Canadian Journal of Genetics and Cytology*, 20: 365-372.
- Burson B. L., Tischler C. R. (1993). Regeneration and somaclonal variation in apomictic *Paspalum dilatatum* Poir. *Euphytica*, 67: 71-78.
- Can E., Celiktaş N., Hatipoglu R. (2000). Effects of genotype and concentrations of 2,4-D on callus induction and plant regeneration from young inflorescences of dallisgrass (*Paspalum dilatatum* Poir.). *Turkish Journal of Agriculture and Forestry*, 24: 113-119.
- Cardona C. A., Duncan R. R. (1997). Callus induction and high efficiency of plant regeneration *via* somatic embryogenesis in *Paspalum*. *Crop Science*, 37: 1297-1302.
- Castillo A. M., Egana B., Sanz J. M., Cistue L. (1998). Somatic embryogenesis and plant regeneration from barley cultivars grown in Spain. *Plant Cell Reports*, 17: 902-906.
- Collins G. B., Vian W. E., Phillips G. C. (1978). Use of 4-amino-3, 5, 6-trichloropicolinic acids as an auxin source in plant tissue cultures. *Crop Science*, 18: 286-288.
- Eapen S., George L. (1989). High frequency plant regeneration through somatic embryogenesis in finger millet (*Eleusine coracana* (L.) Gaertn.). *Plant Science*, 61: 127-130.
- Eapen S., George L. (1990). Influence of phytohormones, carbohydrates, amino acids, growth supplements and antibiotics on somatic embryogenesis and plant differentiation in finger millet. *Plant Cell, Tissue and Organ Culture*, 22: 87-93.
- Gendy C., Sene M., Le B. V., Vidal J., Van K. T. T. (1996). Somatic embryogenesis and plant regeneration in *Sorghum bicolor* (L.) Moench. *Plant Cell Reports*, 15: 900-904.
- George L., Eapen S. (1990). High frequency plant regeneration through direct shoot development and somatic embryogenesis from immature inflorescence cultures of finger millet (*Eleusine coracana* Gaertn.). *Euphytica*, 48: 269-274.
- Grandol M. F., Franklin C. I., Shatters Jr. R. G. (2002). Optimizing embryogenic callus production and plant

- regeneration from 'Tifton 9' bahiagrass seed explants for genetic manipulation. *Plant Cell, Tissue and Organ Culture*, 71: 213-222.
- Gupta P. K. (1998). Chromosomal basis of somaclonal variation in plants. *In*: Jain S. M., Brar D. S., Ahloowalia B. S. (Eds.). *Somaclonal Variation and Induced Mutations in Crop Improvement*. Kluwer Academic Publishers, Dordrecht: 149-168.
- He G. Y., Lazzeri P. A. (2001). Improvement of somatic embryogenesis and plant regeneration from durum wheat (*Triticum turgidum* var. *durum* Desf.) scutellum and inflorescence cultures. *Euphytica*, 119: 369-376.
- Jain S. M. (2001). Tissue culture-derived variation in crop improvement. *Euphytica*, 118: 153-166.
- Jones C. A. (1985). *C₄ grasses and cereals: Development and stress response*. Wiley InterScience, 17 pp.
- Kachhwaha S., Kothari S. L. (1994). Mode of plant regeneration in immature embryo cultures of *Hordeum vulgare* L. *Acta Botanica Indica*, 22: 232-235.
- Kaur P., Kothari S. L. (2004). *In vitro* culture of kodo millet: influence of 2,4-D and picloram in combination with kinetin on callus initiation and regeneration. *Plant Cell, Tissue and Organ Culture*, 77: 73-79.
- Kavi-Kishor P. B., Rao A. M., Dhar A. C., Naidu K. R. (1992). Plant regeneration in tissue cultures of some millets. *Indian Journal of Experimental Biology*, 30: 729-733.
- Larkin P. J., Scowcroft S. C. (1981). Somaclonal variation – a novel source of variability from cell culture for plant improvement. *Theoretical and Applied Genetics*, 60: 197-214.
- Linsmaier E. M., Skoog F. (1965). Organic growth factor requirements of tobacco tissue culture. *Physiologia Plantarum*, 18: 100-127.
- Marousky F. J., West S. H. (1990). Somatic embryogenesis and plant regeneration from cultured mature caryopses of bahiagrass (*Paspalum notatum* Flugge). *Plant Cell, Tissue and Organ Culture*, 20: 125-129.
- Mendoza M. G., Kaepler H. F. (2002). Auxin and sugar affects on callus induction and plant regeneration frequencies from mature embryos of wheat (*Triticum aestivum* L.). *In Vitro Cellular and Developmental Biology-Plant*, 38: 39-45.
- Nayak P., Sen S. K. (1989). Plant regeneration through somatic embryogenesis from suspension cultures of a minor millet, *Paspalum scrobiculatum* L. *Plant Cell Reports*, 8: 296-299.
- Nayak P., Sen S. K. (1991). Plant regeneration through somatic embryogenesis from suspension culture-derived protoplasts of *Paspalum scrobiculatum* L. *Plant Cell Reports*, 10: 362-365.
- Skirvin R. M., Norton M., Mcpheeters K. D. (1993). Somaclonal variation: has it proved useful for plant improvement. *Acta Horticulturae*, 336: 333-340.
- Snedecor G.W., Cochran W. C., (1967). *Statistical Methods*. The Iowa State University Press. Iowa, 593 pp.
- Vikrant, Rashid A. (2001). Direct as well as indirect somatic embryogenesis from immature (unemerged) inflorescences of a minor millet *Paspalum scrobiculatum* L. *Euphytica*, 120: 167-172.
- Vikrant, Rashid A. (2002). Somatic embryogenesis from immature and mature embryos of a minor millet *Paspalum scrobiculatum* L. *Plant Cell, Tissue and Organ Culture*, 69: 71-77.
- Vishnoi R. K., Kothari S. L. (1996). Somatic embryogenesis and efficient plant regeneration in immature inflorescence culture of *Setaria italica* (L.) Beauv. *Cereal Research Communication*, 24: 291-297.
- Wang H. C., Chen J. T., Chang W. C. (2006). Somatic embryogenesis and plant regeneration from leaf, root and stem-derived callus cultures of *Areca catechu*. *Biologia Plantarum*, 50: 279-282.
- Wang H. C., Chen J. T., Wu S. P., Lin M. C., Chang W. C. (2003). Plant regeneration through shoot formation from callus of *Areca catechu* L. *Plant Cell, Tissue and Organ Culture*, 75: 95-98.