MASSIVE MICROPROPAGATION OF ELITE ORGANISMS (SACCHARUM OFFICINARUM) VARIETY MEX 69-290

Salvador Eguiarte[1], José Salazar[2], Tania Siqueiros[1], Carlos Candía[2], Quintín Rascón[1]. [1]Lab. Biotecnología, Facultad de Ciencias Químicas, Universidad Autónoma de Chihuahua, Chihuahua, México, C.P. 31125. [2] MARS/Wrigley México, Santa Catarina, Nuevo León, México.

Correspondig autor: grascon@uach.mx

Key words: Micropropagation, Embryogenesis, Phytohormones

Introduction. Sugarcane (*Saccharum officinarum*) is a tropical grass, a giant grass related to sorghum and maize whose stem is formed and accumulated a rich juice of sucrose, compound to be extracted and crystallized is sugar(1). Today it is required an increase in food production. Therefore the plant tissue culture is an alternative to this concern, since this technique allows an accelerated spread on a large scale production; in reduced space and time for obtain plantlets at any time of year, so ensuring the quality and health sugarcane materials (2). In Mexico, one of the most widely used varieties is MEX 69-290, and this is mainly propagated via internodes (3). It is therefore developed a massive micropropagation of procedure for elite sugarcane (*Saccharum officinarum*) variety MEX 69-290.

Methods. To evaluate the ability of *in vitro* propagation of sugar cane variety MEX 69-290 it was used MS medium(4) supplemented with phytohormones. Immature leaves rolls were used as explants, disinfected explants were placed on medium for callus formation therefore MS medium was supplemented with 2,4-D (0,1 and 3 mg/L). Once formed calli were transferred them to a germination medium placing them on MS medium without hormones. Already with these plantlets were transferred to MS medium rooting supplemented with 2 and 7 mg / L of naphthaleneacetic acid (NAA), and finally transferred to soil.

Results. The callus induction stage took 4 weeks obtaing calli from immature leaves rolls, the best response was observed when added 3 mg/L 2,4-D for the production of calli (Table 1). Once formed calli were transferred to media without hormones which started after two weeks apart able to observe green calli (Figure 1A), after 6 weeks in the same medium was achieved seedlings (Figure 1B).

Table 1. 2.4-D effect on germination and development of organogenic/embryogenic callus of sugarcane explants

Concentration of 2,4-D (mg /L)	NCEU	NPP	Mean	LP (cm)
0	30	102	20.4 [a]	6.5
1	30	41	8.20 [b]	3.0
3	30	17	3.40 [b]	1.8

NCEU: Number of embryogenic callus used, NPP: Number of seedlings produced, LP: Length of plantlets.

The plantlets were transferred to rooting medium and as many root plantlets obtained when were used 2 mg/L NAA thereby obtaining a whole plant (Figure 1C). These plants were transferred to soil; substrate was peat moss and soil (1:1), obtaining 80% of acclimatized plants after 4 months (Figure 1D and 1E).

Fig.1 Micropropagacitio of MEX69-290 variety. (A) Calli formation and differentiation. B) Organogenic stage. C) Root formation. D and E) Soil acclimation.

Conclusions. It was established a micropropagation procedure for sugarcane for the development for massive plantlet production. With an excellent acclimatization ratio, therefore this methodology could be used successfully in field.

Acknowledgements. Author thanks to José María Guerra for inspiring words from MARS/Wrigley México and its financial resources and Ingenio los Mochis, Mochis, Sinaloa México for the support.

References.

1. COMISIÓN VERACRUZANA DE COMERCIALIZACIÓN AGROPECUARIA. Monografía de la caña de azúcar. Veracruz, Mex. Sin año
2. SEGRETÍN, M.E. 2007. Los cultivos de tejidos y sus aplicaciones (cultivos de células vegetales). Consejo Argentino para la información y el desarrollo de la Biotecnología. Argentina. Ediciones BioAgro.
3. MARCOS, Y. (2010). Universidad Veracruzana, Facultad de Ciencias Químicas. Tesis.
4. MURASHIGE T., SKOOG F. (1962). A revised medium for rapid growth and bioassays with tobacco tissue cultures. Physiol. Plant. 15:473-497.