EVALUATION OF DIFFERENT METHODS FOR *in vitro* PLANT REGENERATION OF *Sechium edule*

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Introduction. Chayote (*Sechium edule*) is endemic to Mexico and has great economic significance as an unprocessed produce. However, due to environmental changes, it has been rapidly displaced by other crops such as coffee and corn. As an alternative for plant breeding and crop improvement, micropropagation protocols have been developed for *S. edule* using axillary buds. Establisment and i*n vitro* multiplication of *S. edule* by the organogenic pathway is based on the *in vitro* plant tissue culture technology, which allows production of a large number of plants from small amounts of starting plant material. Development of protocols for *in vitro* culture represents an opportunity for the expansion and diversification of horticultural industry in Mexico. This report also provides guidelines for achieving genetic improvement of the species through the establisment of an efficient plant regeneration system(1). In this work, we evaluated the efficacy of different exposure times and concentrations of sodium hypochlorite for disinfection of plant material, as well as the use of growth regulators such as gibberellic acid GA_3 and benzyladenine BA for the *in vitro* multiplication of *S. edule*.

Methods. Twenty embryos removed aseptically from mature chayote fruits were disinfected for 30 seconds in a 70% solution of ethyl alcohol, followed by 12 minutes in a 50% sodium hypochlorite solution. Afterwards, embryos were rinsed three times with sterile water. The successful *in vitro* establishment of chayote is the first step for developing a regeneration protocol.

Explants were placed in MS medium in aseptic conditions. Cultures were maintained in a growth chamber at 27±2 °C with a 16h photoperiod using fluorescent light (25 µmol /sec /m^2). After aproximately ten days of cultivation and once the embryos had germinated and the seedlings had grown, cotyledons were removed and the leaves were recovered for the *in vitro* treatments. Small incisions were made in each leaf for better response. There were two treatments: A) 0.1 mg/L BA, 0.5 mg/L GA_3 and B) 0.1 mg/L BA, 0.1 mg/L GA_3. Phytagel was used as gelling agent in both treatments.

Results. After 20 days of incubation have developed new plants by the organogenic pathway in all treatments as shown in Figure 1; and the number of shoots developed using BA and GA_3 as growth regulators shown in Figure 2.

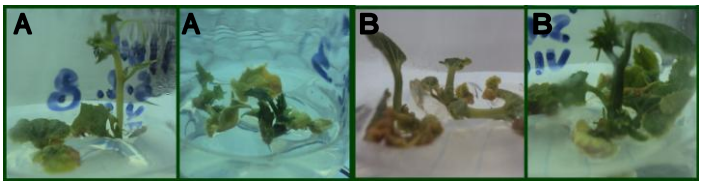

Fig.1 Plants obtained by the organogenesis.

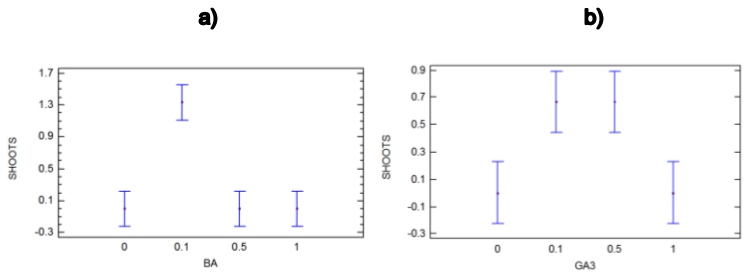

Fig. 2 a) Number of shoots developed using benzyladenine BA at higher concentration than gibberellic acid GA_3 as growth regulators, b) Number of shoots developed using gibberellic acid GA_3 at higher concentrations than benzyladenine BA as growth regulators.

Conclusions. This work shows the feasibility of chayote propagation via organogenesis using *in vitro* tissue culture. According to the results obtained based on the type of shoots and the growth regulator used, propagation can occur when 0.1 mg/L BA and either 0.1 mg/L or 0.5 mg/L GA_3 are used. This work provides producers and breeders with a new tool for the massive multiplication of selected plant materials maintaining the quality and homogeneity of the plants produced.

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References.

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