Crioconservation of *Petunia hybrida* and *Dyckia tuberosa* seeds

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INTRODUCTION

Crioconservation is an interesting tool for genetic resources conservation. The IAC Botanical Garden has the aim to conservate native species from State of São Paulo. It has areas and structures for conservation *in situ*, *ex situ* and *in vitro*, including low temperature chambers. *Petunia* (Solanaceae) and *Dyckia* (Bromeliaceae) are plants that have ornamental value and great appeal for the floriculture market, for these reasons they were object of attention for this study on conservation of their natural diversity.

OBJECTIVE

This trial is part of a research project, with financing of the Fapesp – São Paulo Foundation for Research Development, that has as objective to collect and to conserve species of plants with ornamental potential, in this in case, seeds were submitted to liquid nitrogen to test its viability for crioconservation.

MATERIAL AND METHODS

Accesses of ornamental plants, gotten through collections and also from introduction of commercial material of different regions of Brazil, are used. The major of these accesses are from the Southeastern region. For this experiment, seeds of two species were used: *Petunia hybrida* and *Dyckia tuberosa*. Seeds from *P. hybrida* were bought in the flower market, produced by Isla Pak, identified as "Híbrida Sortida", and *D. tuberosa* seeds were collected in the wild at a location named Pedra Grande, Atibaia, SP.

Four treatments were established:

T1 - control
T2 - crioconservation without protector
T3 - crioconservation with protector sodium alginate
T4 - crioconservation with PVS protector

Each treatment included a sample of 25 seeds, with 4 repetitions. Total of 100 seeds.

The treated seeds had been kept in containers with liquid nitrogen (-196º C) for at the very least 24 hours. The germination of the seeds during the tests was carried through in Petri dishes with cotton humidified kept in BOD with average temperature of 25ºC. The effect of the crioconservation in the quality of the seeds was evaluated by the germination standard test (TPG), lead according to Rules of Analysis of Seeds (BRAZIL, 1992). The data was submitted to the variance analysis, with the averages of the qualitative factors compared by the test of Tukey 5% of probability.

The effect of the treatments on the germination of seeds were verified, observing significant differences in level of 5% for the interaction species and treatment of conservation. For accomplishment of the statistical analyses the data had been transformed to . The data had been submitted to the variance analysis, with evaluation of the interaction between the factors species and treatment, the averages of the factors had been compared by the test of Tukey 5% of probability.

Petunia hybrida


Dyckia tuberosa

RESULTS

The table 1 and figure 1 show the gotten results of the germination. The data show that for T1, *Petunia hybrida* and *Dyckia tuberosa* the germination was, in average, of 88% and 60%, respectively. For T2, 83% and 58%, respectively; for T3, 5% and 72% and, finally, for T4, 82% and 85%. The results prove that the use of protective agents is not necessary for the crioconservation of *Petunia hybrida*, once the best percentage of germination had occurred in the control (88%). The use of the sodium alginate showed total inadequate to conserve seeds of *Petunia hybrida*, showing an almost total mortality of the seeds (5% of germination). For *Dyckia tuberosa*, the best tax of germination was observed with the protective agent of PVS2 with 85%, followed of the sodium alginate with 72%, proving an stimulant action of these agents on the germination of the seeds of this species.

MOURA et al. (2006), studying crioconservation in four species of passion fruit observed significant interaction among them, detecting that different species had had differentiated behavior to the treatments, the authors also detected variations between the conservation methods. It was conclude that crioconservation without protection of the seeds showed more efficient and the crioprotectors sodium alginate and PVS2 reduced the percentage of emergency of plantlets. MOURA et al. (2006) suggest to better search the used crioprotectors. The results gotten with *Petunia hybrida* corroborate with the results previously gotten with the *Passiflora*.

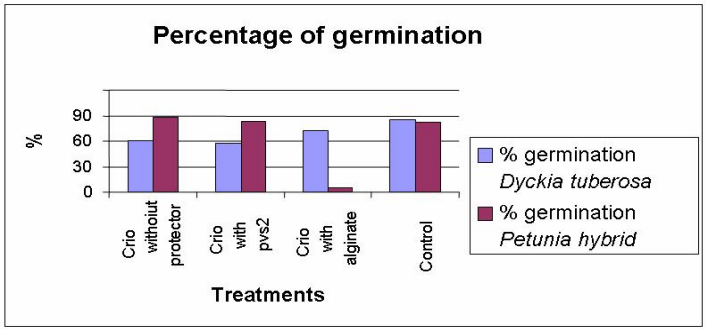

Figure 1 – Histogramme for percentage of germination of plantlets (%) for *Dyckia tuberosa* and *Petunia hybrida*.

Table 1- Averages of percentage of germination (%) of *Dyckia tuberosa* and *Petunia hybrida* submmited to crioconservation treatments

Treatment/species	*Dyckia tuberosa*	*Petunia hybrida*
T1. control	60[1/] a	88 a
T2. -196ºC	58 a	83 a
T3. -196ºC + sodium alginate	72 a	5 b
T4. -196ºC + PVS_2	85 a	82 a

1/Averages followed by the same letter do not differ between them by the Tukey test for the level of 5% of probability. DMS: 0,0212.

CONCLUSION

Crioconservation is a technique that can be successfully applied for long term conservation for the species *Petunia hybrida* and *Dyckia tuberosa*, once one observe the use or not of crioprotectors.

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