

TISSUE CULTURE RESPONSE OF *SOLANUM BULBOCASTANUM* (+) *S. TUBEROSUM* SOMATIC HYBRIDS

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In the present study, *Solanum* somatic hybrids were tested for their ability to respond to tissue culture. Plant material consisted of 4x and 6x genotypes obtained from *Solanum bulbocastanum* (+) *S. tuberosum* haploids fusions. They carry noteworthy traits from a breeding standpoint, but they are sterile and therefore cannot be crossed both as female and male parent.

In order to utilize them, we carried out two *in vitro* approaches. The first is based on regeneration from leaf/internode explants, in order to exploit somaclonal variation. The second is based on haploid extraction through anther culture. We may expect that due to recombination, haploids may be fertile in crosses with potato genotypes. From four somatic hybrids internode and leaf explants were excised from *in vitro* plantlets and a two-step regeneration protocol was employed. All the clones tested regenerated, with an average regeneration frequency of 60% and 4 shoots explant. Molecular analysis through ISSR markers provided evidence that genetic rearrangements occurred. Plant material is being tested for fertility. As for anther culture, *in vitro* androgenesis through direct embryogenesis was carried out for six somatic hybrids. Two thousand and five hundred anthers were cultured and 27 produced microspores-derived embryo structures. In total, 10 green plants were regenerated. From two somatic hybrids we obtained embryogenetic mass. They generated 80 embryos which evolved later in shoots. Haploids derived from interspecific somatic hybrids are relevant research materials for inheritance studies and for cytological determination of transmission of parental species chromosomes into microspores and haploid plants. Crosses will be performed between haploids and *S. tuberosum* genotypes with various Endosperm Balance Number. Alternatively, haploids will be fused with potato haploids.