



Effect of Media on Gynogenesis Induction in Leek (*Allium ampeloprasum* L.) Breeding Materials

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Leek (*Allium ampeloprasum* L.) is one of the economically important members of the genus *Allium* (family: *Alliaceae*). It is a self-compatible, outbreeding, tetraploid ($2n=4X= 32$) crop species that is very difficult to improve through traditional breeding strategies. Entegration of doubled haploid (DH) techniques such as gynogenesis into the leek breeding programs may speed up the variety development. In order to optimize a gynogenesis induction protocol for leek, we carried out experiments by culturing immature flower buds on various tissue culture media. Among the media tested, BDS and MS-based media with various combinations of plant growth regulators provided gynogenic embryos. Frequencies of gynogenic plantlet development were generally low and plantlets were obtained from almost all media included in the experiments. A total of 48 gynogenic plants were produced from approximately 30 thousand immature flower buds from six donor materials included in the experiments. In the DNA amount measurements performed with flow cytometry, it was found that gynogenic *A. ampeloprasum* plants were mostly diploid (55.56 %) and the others were tetraploid (44.44 %). Diploid and tetraploid gynogenic plants were transferred to *in vivo* for further evaluation and grown in a greenhouse to produce selfed seed. Our studies with leek and several other *Alliums* indicate that gynogenesis induction frequencies are generally low due to genotypic effect. In order to obtain sufficient numbers of gynogenic lines from leek breeding populations, high numbers of immature flowers should be cultured on gynogenesis induction media. We suggest use of large size flower buds collected several days prior to anthesis while establishing gynogenesis induction cultures in leek. BDS medium that is commonly used in onion gynogenesis studies can also be used for the production of gynogenic leek lines.

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