

Responses of Cultivated and Wild Leeks to Gynogenesis Induction

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Aim of the study: Cultivated leek (*Allium ampeloprasum* var. *porrum*) is an important agricultural crop plant grown and consumed in many parts of the world. Wild leek (*Allium ampeloprasum*) grows naturally in many parts Mediterranean region. In Turkey, these cultivated and wild forms of leek can be found side by side in the farmlands of southern and western Turkey. Both of these leeks are tetraploid ($2n=4x=32$) and they can interbreed with each other. The aim of present study was to develop an efficient and reliable system for high frequency induction of gynogenic plants via gynogenesis in cultivated and wild leek materials.

Material and Methods: Plants materials used in this study were obtained PAU BIYOM *Allium* improvement program. Plants from both leek materials were grown in an unheated greenhouse. Immature flower buds were collected from the umbels between mid-May and mid-June. Gynogenesis induction experiments were carried out by culturing large buds (>3 mm) in BDS- and MS- based media supplemented with different plant growth regulators at varying concentrations. All media contained 100 g/l sucrose and were solidified with 7 g/l agar. Bud cultures were placed in a culture room and observed weekly. Ploidy levels of some of the regenerants were determined using flow cytometry. Acclimated gynogenic plants were transferred into a greenhouse and grown under standard growing conditions. Morphological features of plant materials were evaluated and recorded.

Results: In vitro gynogenesis induction experiments yielded gynogenic plants from both cultivated and wild leek materials. In general, gynogenesis responses were low (less than 1%) in both species. Gynogenic regenerants from both leek materials were all green and grew well in *in vitro*. Flow cytometry analysis showed that there were diploid ($n=2x=16$) and tetraploid ($2n=4x=32$) plants among them. Diploid and tetraploid gynogenic plants were acclimated and grown in a greenhouse. Diploid and tetraploid plants from both leek materials showed significant differences in many morphological features evaluated.

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Key words: *Allium ampeloprasum*, Cultivated, Gynogenesis, Wild.