

PRODUCTION OF DRY TYPE ARTIFICIAL SEEDS BY MEANS OF PVC-FOIL DESICCATION METHOD FROM GENETICALLY ENGINEERED SOMATIC EMBRYOS OF CARROT (*Daucus carota* L. cv. Nantes Duke)Fári, M.^{1*}; Sorvari, S.²; Ahanen, K.²; Melo, N. F.³ & Hiirsalmi, H.²

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The physiological process of desiccation of the seeds & zygotic embryos is a genetically determined phenomenon, which had been developed during the evolution of the Higher plants. In the point of view of commercial application of the artificial seed technology, the improvement of the dry type artificial seed technology seems to be one of the most promised approach (Redenbaugh, 1993). In order to develop a simple, and reliable protocol for laboratory-scale use, a new protocol of desiccation have been investigated based on PVC-foil covering method. Kanamycin-resistant (Km^R) lines were obtained from cut somatic embryos of carrot (*Daucus carota* L. cv. Nantes Duke) by means of *Agrobacterium tumefaciens* transformation method using pGS gluc-1 cointegrate vector, following the protocol of Fári et al. (1994). Filter-uniformed, 500 μ m length early-cotyledon stage somatic embryos were produced from a line of Km^R Nantes Duke according to the protocol of Sorvari et al. (1994) without kanamycin selection. Sodium-alginate-encapsulated artificial seeds were produced following the method of Redenbaugh et al. (1986). Using an appropriate protocol of desiccation based on PVC-foil covering method (Fári et al., 1989), dry type artificial seeds were produced. Twenty artificial seeds were placed into each Petri-dishes of 10 cm diameter and sealed with 50 μ m thin, commercial type PVC-foil (FOLPACK, Hungary). The cultures have been exposed to 30% external relative humidity (RH) in darkness at 25 °C. The desiccation was determined by weighting the water loss in three-hour-intervals. After 48 hours of desiccation, the process of rehydration and germinated were carried out on MS (1962) medium supplemented with 100 mg/liter kanamycin in Petri-dishes. According to our observation, the PVC-foil desiccation method of artificial seeds is a simple, and highly reproducible new method. Under the experimental condition used, the pattern of desiccation was linear. The speed of water loss have been very slow, 4 mg/h⁻¹ and after 48 hours, an average 15% water content was measured. In the experiment of germination, an average 60% of the dry type artificial seeds showed good germination and their root-tips penetrated to the selection medium containing kanamycin and they elongated intensely. To get homogeneous experimental response, according to our data, the calibration of the artificial seeds is highly important prior the desiccation phase.