

PRODUCTION OF WHEAT STARCH BASED ARTIFICIAL ENDOSPERM BY GEL-SANDWICH TECHNIQUE AND PLANTLET CONVERSION FROM ISOLATED ZYGOTIC EMBRYOS IN PEPPER (*Capsicum annum L. cv. Fehérözön*)

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Theoretically, the seed-analogue type artificial seed have to be considered as the third generation of the SYNSEED technology. According to this idea, therefore, it should be manufacture this type of artificial seeds with an appropriate artificial endosperm, which consists of storable, enzymatically digestible and biologically active compounds, to copy the natural seeds. Meanwhile, in the literature of the SYNSEED technology the starch is a neglected compound, however, it is one of the most commonly spread form of store-compound of the endosperm in the seeds of Higher plant. Investigations were carried out in our laboratory to develop appropriate experimental method for the wheat starch, as a potential row material for artificial endosperm. A new method, the "starch gel-sandwich artificial seed" have been established and investigated. Wheat starch based MS (1962) medium was prepared according to the method of Fári (1990), and it was poured into plastic Petri-dishes of 10 cm diameter to make two-millimetre high starch-medium layers. Modified pipette-tip was produced from a normal pipette of 2000 μ l capacity, which was cut-down at the end to make a cylinder of 8 mm diameter. Wheat starch medium-disks were obtained using this simple instrument with Finpipette. Following the appropriate embryo-rescue method described by Fári et al. (1983), mature, 32-34 day-old, ring-shape zygotic embryos of pepper (*Capsicum annum L. cv. Fehérözön*) were isolated and placed onto the surface of the wheat starch medium-disks. After, a second disk was used to form a gel-sandwich structure, consisting one zygotic embryo of pepper and two gel-disks of wheat starch medium. The wheat starch gel-sandwich complexes were dehydrated following the procedure of PVC-foil desiccation method described by Fári et al. (1996), until 50%, 25% and 15% of water content, than they were rehydrated with distilled water. After two weeks, the ratio of germination were calculated and the plantlets were acclimatised and transferred to greenhouse. According to the 50%, 25% and 15% water content of the desiccated wheat starch gel-sandwiches artificial endosperm, the percentage of the germination were 100%, 60% and 40%, respectively. The germinated plantlets germinated well, produced flowers and normal seed set was recorded. On the basis of the "gel-sandwich method", out of wheat starch, it is possible to test and produce a large scale enzymatically degradable compounds of artificial endosperm, without restriction the characters of chemo-hydrogels, used in the sodium alginate method.