ACTA BIOLOGICA CRACOVIENSIA Series Botanica 52/1: 111–115, 2010

OPTIMIZING CULTURE FOR IN VITRO POLLINATION AND FERTILIZATION IN *CUCUMIS SATIVUS* AND *C. MELO*

DAGMAR SKÁLOVÁ*, BOŽENA NAVRÁTILOVÁ, VLADAN ONDŘEJ, AND ALEŠ LEBEDA

Palacký University in Olomouc, Faculty of Science, Department of Botany, Šlechtitelů 11, 783 71 Olomouc-Holice, Czech Republic

Received July 3, 2009; revision accepted March 20, 2010

In vitro pollination can be used to overcome crossing barriers in interspecific hybridization within the genus *Cucumis*. This technique offers a way to produce viable interspecific hybrids. We tested two types of media, designated CP and YS, for in vitro pollination in *Cucumis sativus* and *C. melo*. Pollen grains were isolated by centrifugation or directly from mature male flowers and were cultured with mature ovules. We assessed pollen grain viability, fertilization ability, and fertilized ovule development. The developing ovules (becoming enlarged and green) were transferred to media supporting embryogenesis (with ascorbic acid, caseinhydrolysate, coconut water and gibberellic acid). The highest level of regeneration after in vitro pollination was callus formation from ovules. We found caseinhydrolysate to be the most beneficial component during in vitro pollination (CP medium) and during development of fertilized ovules (ON medium). The hybrid character of fertilized ovules arisen from crosses between cucumber and muskmelon was checked but not confirmed by RAPD analysis, for reasons we suggest. The in vitro protocol needs to be optimized further to obtain a high yield of potential hybrid embryos.

Key words: *Cucumis* spp., cucumber, muskmelon, intraspecific hybridization, interspecific hybridization, in vitro pollination, in vitro fertilization, RAPD analysis.

e-mail: dagmar.skalova@upol.cz