DEVELOPMENT OF EMBRYO RESCUE TECHNIQUE FOR WIDE-HYBRIDIZATION OF CAPSICUM

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Wide-hybridization is a technology that used to incorporate important traits. The embryo abortion stands as a barrier in wide-hybridization due to zygotic incompatibilities. Therefore embryo rescue technique could be used to overcome the above barrier resulted due to embryo abortion. A study was carried out to find the suitable embryo rescue medium and immature embryo age on germination of hybrid embryos through embryo rescue technique using *Capsicum annuum* (Malumiris) and *Capcicum frutescens* (Kochchi). Four types of mature embryos namely HYW, LYW, 1782, C-8 were cultured in four combinations of MS media (MS-A, MS-B, MS-C, MS-D) to select the best initiation medium. Further, immature self-pollinated embryos (HYW) of 5, 10 and 15 days old were cultured in selected media to determine the best rescue medium. Three accessions of "Kochchi" (C-8, C-12 and C-17), used as male parents, were crossed with three capsicum cultivars of HYW, LYW and 1782 as female parents. Immature seeds were detached 5 to 15 days after cross pollination and cultured in the rescue medium. The results revealed that MS-A and MS-D were the most effective for mature and immature self-pollinated embryo germination. MS-A medium had same composition as MS-D except 0.1 mgl^{-1} BAP. MS-D medium was supplemented with casein hydrolysate (CH) 500 mgl^{-1}, gibberellic acid (GA_3) 0.5 mgl^{-1}, naphthaleneacetic acid (NAA) 0.05 mgl^{-1}, and 6-benzylaminopurine (BAP) 0.1 mgl^{-1}. Germination percentages of successful HYW wide-hybrids were 8.69 and 8.95, in 10 and 15 days old embryos, respectively. Embryo abortions were observed, 5 days after pollination from LYW×C-12 and LYW×C-17 crosses. Only 5 days old embryos obtained from LYW×C-8 cross were successful with the germination percentage of 5.21. Germination percentage of 5 days old embryos obtained from 1782 and *C. frutescens* crosses was 3.04. Therefore, this study could be used to develop improved hybrids by transferring commercially important traits from *C. frutescens* to *C. annuum* through the embryo rescue medium paying special attention to the embryo age.

Keywords: *Capsicum annuum*, *Capsicum frutescens*, Embryo rescue, Wide-hybridization