

Turkish Journal of Botany

Turkish Journal

of

Botany

The Effects of Cold Treatment and Charcoal on the In Vitro Androgenesis of Pepper (*Capsicum annuum* L.)

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Abstract: The effects of cold-shock treatment of *Capsicum annuum* L. buds at 4°C for 48 or 96 h, and the addition of 0.25% activated charcoal on embryo formation were examined. Murashige and Skoog (MS) basal nutrient medium was supplemented with combinations of 4 mg l⁻¹ naphthalene acetic acid (NAA) and 1 mg l⁻¹ benzyladenine (BA) or 1 mg l⁻¹ NAA and 4 mg l⁻¹ BA, together with 0.8% (w/v) agar and 3% (w/v) sucrose. The highest number of embryos was obtained from the control anthers which were not subject to cold treatments and were cultured on MS medium containing 4 mg l⁻¹ NAA and 1 mg l⁻¹ BA and activated charcoal. The mean androgenetic embryo production was found to be about 12.5%. The addition of growth regulators and activated charcoal had a greater effect than a cold pretreatment on embryo formation in pepper anther culture. On the other hand, the developmental stages of the microspores of this pepper genotype were investigated. Cytological studies were performed using the acetocarmine squash and paraffin methods. The bud size and morphological characteristics of the buds and anthers were defined and the microspore stages were determined. The buds 5 mm in diameter and 7 mm in length were determined to contain microspores at the uninucleate and 1st pollen mitosis stages. At this stage, the length of corolla was about the same as or slightly greater than that of the calyx.

Key Words: *Capsicum annuum* L., pepper, androgenesis, anther culture, cold shock treatment, activated charcoal.

Turk. J. Bot., **26**, (2002), 131-139.

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