

Effect of the ethylene inhibitor silver nitrate on somatic embryogenesis of date palm

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Abstract

Variability in callus growth and somatic embryogenesis in response to silver nitrate (AgNO_3) among date palm (*Phoenix dactylifera* L.) genotypes was investigated. Callus was cultured on MS medium containing $53.7 \mu\text{M}$ NAA and $7.4 \mu\text{M}$ 2iP and supplemented with AgNO_3 at 0, 12.5, 25, 37.5, 50, 62.5, 75, 87.5, or $100 \mu\text{M}$. Subsequently, somatic embryogenesis was induced by transferring callus to hormone-free MS medium containing corresponding concentrations of AgNO_3 . Callus growth of cv. Barhee, Naboot Saif, Ruzai, and Hillali was significantly promoted in response to $37.5 \mu\text{M}$ AgNO_3 but optimum growth was obtained at $50 \mu\text{M}$ except for cv. Hillali the optimum was $62.5 \mu\text{M}$. In contrast, cv. Khusab produced significant callus weight increase at $12.5 \mu\text{M}$ but maximum growth was obtained at $62.5 \mu\text{M}$. Similarly, callus proliferation preceding somatic embryo formation during the regeneration stage as well as the frequency somatic embryogenesis and the number of resultant embryos varied significantly among cultivars and depended upon AgNO_3 concentration. Regeneration percentage was significantly enhanced in all genotypes except cv. Hillali was unaffected. Optimum AgNO_3 concentrations were 62.5, 50, $37.5 \mu\text{M}$ for cv. Barhee, Hillali, and Ruzai, whereas $12.5 \mu\text{M}$ was optimum for cv. Naboot Saif and Khusab. Significant increase in the number of resultant somatic embryos was observed in cv. Barhee, Naboot Saif, and Ruzai in response to 75, 12.5, and $37.5 \mu\text{M}$ but the optimum concentrations were 75, 87.5, and $75 \mu\text{M}$ AgNO_3 , respectively. Embryo number in cv. Hillali and Khusab was unchanged or decreased.