

THE INFLUENCE OF ZEARELEONE AND THIDIAZURON ON CELL DIFFERENTIATION IN RAPE AND WINTER WHEAT

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In the plant regeneration process, a great deal of variability is observable between different varieties and genotypes. Even within the same genotype, there are differences in the intensity of this process. New biologically active substances are currently being tested to increase the effectiveness of regeneration in plants. Among them are zearelonene (ZEN) – a substance obtained from an extract of the fungus *Gibberella zeae*, and thidiazuron (TDZ) – a synthetic derivative of urea. ZEN shows similar activity to auxins, and its most important feature is the ability to regulate the induction and differentiation processes of callus tissue *in vitro*. TDZ, through its ability to stimulate cell division, imitates the activity of cytokines. The aim of this study was to test the co-operation of ZEN and TDZ with other growth and development regulators for the callus tissue of rape and winter wheat.

For winter wheat, immature embryos were obtained 14-16 day after anthesis, whereas the callus of rape was induced on fragment hypocotyls of the seedlings. Murashige and Skoog (MS) basal medium was used in all the experiments, with 3% (w/v) sucrose (control) and/or 2 mg·2,4-D dm⁻³+2 mg·ZEN dm⁻³+TDZ (at concentrations of 0.25, 05, 1.0 mg·dm⁻³). The calli of rape were cultured on MS media containing 1 mg BAP·dm⁻¹+0.5 mg ZEN·dm⁻³ (control) or 1 mg BAP·dm⁻¹+0.5 mg ZEN·dm⁻³+TDZ (at concentrations of 0.25, 05, 1.0 mg·dm⁻³).

The growth intensity of rape and winter wheat callus tissue is dependent on medium composition. The fresh mass of calluses of rape and winter wheat increased most effectively at ZEN and TDZ concentrations of 0.5mg dm⁻³. Although this parameter for both plants is independent of the time of culture, the increase of callus tissue is most rapid in the first phase of culture. Moreover, the addition of ZEN and TDZ at a concentration of 0.5mg dm⁻³ increases the percentage of differentiated callus, of and callus that can regenerate wheat shoots. The regeneration of rape callus after ZEN and TDZ treatment is significantly lower. ZEN and TDZ at their highest concentrations significantly ($\alpha < 0.05$) increase the amount of undifferentiated callus.