

## **Wpływ cefotaksymu i karbenicyliny na żywotność i rozwój protoplastów marchwi**

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### **The effect of cefotaxime and carbenicillin on viability and development of carrot protoplasts**

#### **Summary**

We examined the toxicity of two antibiotics belonging to the betalactam group, to carrot (*Daucus carota* L.) protoplasts. Leaf protoplasts were cultured in the presence of cefotaxime or carbenicillin applied in five concentrations in the range from 0.1 to 0.5 mg ml<sup>-1</sup>. Cell viability, division frequency, and regeneration capacity were assessed to determine the potential toxic effect of the antibiotics. Both antibiotics significantly reduced protoplast viability and their ability to divisions. Their toxic effect intensified linearly with increasing antibiotic concentrations in the culture medium. More pronounced negative effect exhibited carbenicillin, which was evident 24 h after protoplast isolation. It also lowered cell mitotic activity two- to ten-fold, as compared to the control. Despite different reaction of cells exposed to carbenicillin and cefotaxime, callus tissue and somatic embryos were successfully obtained and allowed efficient plant regeneration. The comparison of the obtained results indicates that cefotaxime used in concentrations up to 0.2 mg ml<sup>-1</sup> can be recommended in carrot cell cultures to prevent microbial contamination.

#### **Key words:**

antibiotics, callus, *Daucus carota*, *in vitro*, plant cell culture, somatic embryogenesis

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