

Estimation of genotype, explant size and microbial enzymes influence on regenerative capacity of potatoes

Tikhonova O., Toymentseva A., Savenkova A., Gizatullina A., Gimaeva E., Vologin S., Karamova N., Stasevski Z.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

In this study effects of genotype, explants size and the composition of the culture medium on regeneration capacity of apexes of etiolated potato tubers sprouts were estimated. We observed positive correlation among survival, growth and development of plant tissues in vitro and the size of plant explants. When the cultivation medium was supplemented by RNase A (1-10 µg/ml) and ribonucleases from *Bacillus pumilus* (RNase Bp, 1 µg/ml) 35% increase of the number of the regenerants was observed. Enzymes with ribonuclease activity at low concentrations (1-10 µg/ml) stimulated regenerative and morphogenic processes. In contrast neither plant regeneration dynamic nor plant morphogenesis were changed when cultivation medium was supplemented by other *Bacillus pumilus* proteolytic enzymes (subtilisin-like protease (AprBp), glutamyl endopeptidase (GseBp) and metalloendopeptidase (MprBp) in concentration of 1 µg/ml.

Keywords

Bacillus pumilus, Glutamyl endopeptidase, Metalloendopeptidase, Plant regeneration, Potato, Ribonuclease, Subtilisin-like protease