

**MORPHO-BIOLOGICAL AND CYTOLOGICAL CHARACTERISTICS
OF THE REGENERATED ROOTS OF TOMATO (*Solanum lycopersicum* L.) VARIETIES
“RECORDSMEN” UNDER NaCl-SALINITY *IN VITRO***

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The aim of this study was a comparative analysis of tomato roots regenerated in the cultural medium *in vitro* supplemented with 0–250 mM NaCl. To study morphogenetic responses at the organ level, NaCl concentrations that inhibit rhizogenesis were established, and a morphometric analysis of regenerated roots from juvenile seedlings (the number and length of regenerated roots, as well as their net and dry biomass) was carried out. As a result of cytological analysis, disturbance at the tissue level were detected, which were expressed in a change in the degree of vacuolization of the root cap cells and root cortical cells (RCC) under salinity. At some concentrations of NaCl, a significant change in the length of the root cap (50–100 and 250 mM NaCl) and the number of its layers (50, 75, 150–250 mM NaCl), as well as the areas of the root cells of the central cylinder (RCCC) (75–150 and 250 mM NaCl) and RCC (100–200 mM NaCl), as well as the nucleolar-nuclear ratio in the cells of these tissues (25, 50 and 200 mM NaCl), are noted. A cytophotometric analysis showed an increase the number of root meristem cells in the G₂ phase while simultaneously decreasing in the G₁ phase. Immunofluorescent staining have been established different variants of alpha-tubulin cytoskeleton disorganization in interphase cells of the root meristem. Transmission electron microscopy revealed structural changes of plastids in the root cap, RCC and KCCC, as well as disturbance of the nuclear compartment in the RCC under 150 mM NaCl. These characteristics can be employed for comparative evaluation of tomato genotypes under salinity at different levels of organization. Proposed methodological approach can also be applied to crops without difficulty of root formation *in vitro*.

Keywords: *Solanum lycopersicum* L., *in vitro* root regeneration, NaCl-salinity, tubulin cytoskeleton, anatomical root structure, root cap