

Ammonium Supply Induces a Polyamine Accumulation in Sorghum Plants Subjected to Salt Stress

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INTRODUCTION: Polyamines are low-molecular-weight aliphatic amines, which are involved in regulation of plant growth and development. Nevertheless, several reports have shown that enhanced polyamine biosynthesis can protect plants against salinity by scavenging free radicals, stabilizing membrane and cellular structures, and other important processes of plants. **OBJECTIVE:** This study aimed to evaluate the influence of inorganic nitrogen nutrition on polyamine accumulation of sorghum plants subjected to salt stress. **MATERIAL AND METHODS:** *Sorghum bicolor* seeds were sown in vermiculite for four days. Thereafter, uniform seedlings were transferred to Hoagland's nutrient solutions containing nitrogen as either NO₃⁻ or NH₄⁺ and, after seven days, the plants were submitted to salt stress by adding NaCl at 0 (control) or 75 mM (stress). After five days of salinity, free and conjugated polyamines were extracted and quantified by high performance liquid chromatography. **RESULTS AND DISCUSSION:** In general, salt stressed plants exhibited contents of free and conjugated putrescine (Put) higher than the control, irrespective of nitrogen source. Under salt stress, Put content of NH₄⁺-fed plants was significantly higher than that of NO₃⁻-treated plants, except for the insoluble Put in leaves. In NH₄⁺-grown plants, salinity promoted an increase in insoluble-conjugated spermidine (Spd) and a decrease in soluble-conjugated form, whereas the opposite was registered for NO₃⁻-grown plants. In addition, free Spd content was increased by salt stress, except for roots of plants treated with NH₄⁺. Surprisingly, the spermine (Spm) was detected only in the leaves of plants from NH₄⁺ treatment. **CONCLUSION:** Our data evidenced that NH₄⁺ triggers a massive polyamine accumulation; specially Put and Spm, which in turn may act as protector molecule in the salt responses of sorghum plants.

Keywords: Nitrogen source; Salt stress; *Sorghum bicolor*; Putrescine; Spermidine; Spermine

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