

**TITLE: EXOPOLYSACCHARIDES PRODUCTION UNDER SALINE STRESS BY BACTERIA ISOLATED FROM *Atriplex nummularia* L.**

**AUTHORS:** Freitas, C.C.G.<sup>1</sup>, Barbosa, J.G.<sup>1</sup>, Silva C. F.<sup>1</sup>, Rodrigues Y.F.<sup>1</sup>, Teixeira, M.F.<sup>1</sup>, Oliveira, L.F.P.<sup>1</sup>, Kuklinsky-Sobral, J.<sup>1</sup>

**Institution:** <sup>1</sup>UFRPE - Universidade Federal Rural de Pernambuco (Av. Bom Pastor, s/n, Boa Vista, Garanhuns – PE)

**Abstract:**

Agricultural regions of Brazil are subject to adverse conditions, which can cause a variety of abiotic stresses cultivars, significantly reducing the production. A possible alternative to minimize these impacts is the use of plant growth promoters, microorganisms able to adapt to various stressful situations, by having ability to produce exopolysaccharides (EPS), and thus, change the situation in the rhizosphere soil, easing these unfavourable conditions for the plant. In this sense, this paper aimed to analyze halotolerant bacteria for their ability to produce EPS in different saline concentrations. Three bacteria isolated from *Atriplex nummularia* L., grown on the interior of Pernambuco state, (root endophytic -UAGAt33, UAGAt35 and rhizosphere - UAGAt 71) were analyzed. The bacteria strains were grown in liquid medium TSA 100% and inoculated in 5 mm diameter discs in solid culture médium modified by adding 10% of the carbon source, sucrose, plus 0%, 2.5%, 5.0% and 7.5% NaCl. The bacteria were incubated for 96 hours at temperature of 28° C. The experiment was performed in triplicate and EPS production was assessed qualitatively in relation to the diameter of bacterial halo. Bacteria that had a halo of EPS  $\leq 10$  mm in diameter were regarded as low production, with a halo of EPS between 10 to 14 mm, had a median production, which reached diameter  $\geq 14$  mm were classified as high production. It was later held to confirm the production of EPS, collecting cellular material of bacterial colonies with Platinum handle and placing them in tubes with 2 mL of ethyl alcohol. The three bacteria responded positively about exopolysaccharides production. The strains of the root endophytic niche (UAGAt33 and UAGAt35) showed results considered high (above 14 mm diameters) across all levels of NaCl with a smaller production at concentrations of 5% and 7.5%. The strain UAGAt71 presented results in high concentrations of 0%, 2.5% and 5%, with peaks in the first two concentrations, but the 7.5% the bacteria has been considered low production. The bacteria studied were able to produce EPS in various conditions, with potential for plant adaptation to saline soils.

**Keywords:** abiotic stresses, halotolerant bacteria, rhizosphere.

**Development agencies:** Ministry of Education (MEC/Sesu – PET)