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**Endophytic bacteria from *Deschampsia antarctica* and assessment of their potential to promote plant growth**

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Microorganisms dominate most Antarctic ecosystems and, in this extremely cold environment, bacteria have colonized several habitats, playing a major role in biogeochemical cycles. However, little is known about the diversity of microorganisms associated with plants present in this continent. One of these plants is the *Deschampsia antarctica*, adapted to live in this extreme condition, with photosynthetic activity at 0°C. *D. antarctica* offers unusual resistance to the damage caused by stressful environmental factors, and therefore, a special “hotspot” for novel microorganisms that colonize the rhizosphere and the inner tissues (endophytes). Endophytic bacteria can enhance plant growth by a variety of mechanisms like phosphate solubilization, biological nitrogen fixation, phytohormone production and others. Phosphate solubilizing bacteria play a significant role in turning phosphorus available to plants and the phytohormone indole-3-acetic acid (IAA) is the most commonly produced auxin. Therefore, the aims of this study were to characterize the culturable diversity of endophytic bacteria, isolated from *D. antarctica*, and to evaluate their maize growth-promoting abilities. A total of 68 endophytic bacteria from roots and shoots were isolated and tested for the production of IAA, P-solubilization and their potential to promote maize growth under greenhouse conditions at 15°C, 20°C and 25°C. The results indicated that all the endophytic strains were able to produce IAA equivalents in qualitative and quantitative determinations, and some of them were able to solubilize phosphate on solid medium supplemented with calcium phosphate. Three strains were capable of producing high levels of gluconic acid when grown in broth medium supplemented with rock phosphate. Three highly efficient strains for P-solubilization and IAA production, identified as *Pantoea* spp. and *Pseudomonas* sp., were selected for plant growth promotion. The strains showed high levels of IAA and gluconic acid production, 5.55-28.94 µg.ml<sup>-1</sup> and 0.15-2.8 mg.ml<sup>-1</sup>, respectively. Only one strain of *Pantoea* sp. (CMAA934) exhibited increased shoot and root growth and maize seed germination at 20°C. This bacterium could be further applied as an inoculant in agriculture in cold areas.