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## **IN VITRO GERMINATION OF *Handroanthus ochraceus* MEDIATED BY CONSORTIA OF NATIVE BACTERIA**

Salotti, Ariel Horacio<sup>1,2</sup> - Larraburu Ezequiel Enrique<sup>1,3</sup>

1) Laboratorio de Cultivo de Tejidos Vegetales “Berta. E. Llorente” (CULTEV). Departamento de Ciencias Básicas. Universidad Nacional de Luján. Provincia de Buenos Aires. Argentina.

2) Comisión de Investigaciones Científicas de la Provincia de Buenos Aires (CIC). La Plata. Provincia de Buenos Aires. Argentina.

3) Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). Ciudad Autónoma de Buenos Aires. Argentina.

Contacto: ezequiel.e.larraburu@gmail.com

*Handroanthus ochraceus* “yellow lapacho” is a native tree from Argentina. It holds significant ornamental value and is widely cultivated for urban trees in South America due to its profuse yellow flowering during spring. The isolation and characterization of bacteria associated with this tree or related species allow the selection of those that interact synergistically in a symbiotic manner. Moreover, using a consortium to replace each bacteria alone could improve plant growth by emergent properties. Recent studies advocate using consortia with bacteria of different genera to promote growth in forage and woody species. What sets this research apart is the unique approach of using bacterial consortia, a method that has shown promising results in promoting growth in forage and woody species. It is important to note that there is limited information available on the consortium-yellow lapacho interaction. Therefore, this work aims to determine the effect of consortia on the germination of yellow lapacho through in vitro tests in Woody Plant Medium with activated carbon. The strains used in the consortium were *Rhizobium* sp. (L12), *Advenella* sp. (L21), *Stenotrophomonas* sp. (L20), *Methylobacterium* sp. (L10), and *Bacillus mycoides* (L25). These strains are part of the laboratory collection and they were obtained from the rhizosphere and the phyllosphere of *Handroanthus impetiginosus* “pink lapacho.” Bacterial development and compatibility between one and others were evaluated by plating using nutrient agar. The consortium was prepared by cultivating the different bacterial strains at  $24 \pm 1$  °C for 24 hours with shaking at 140 rpm in nutrient broth. Inoculum formulation was performed using an aqueous solution of 1% CMC and 1% starch. Each consortium was developed by combining two bacterial strains; therefore, ten consortia were evaluated. The consortia were preserved for 72 h under stirring at  $24 \pm 1$  °C. Then, 100 µl of each consortium was inoculated on the seeds under aseptic conditions. Uninoculated seeds were the controls. The percentage of germination and contamination were determined weekly, whereas the length of the epicotile, hypocotyl, and the number of leaves were evaluated at 30 days. A biometric parameters index (IPB) was built to analyze the global effects of the studied treatments. The consortia L10-L21, L12-

L20, and L12-25 presented a higher germination percentage than the control. Also, when examining the IPB, a significant increase was observed in the plants inoculated with the L10-L21 and L10-L20 consortium compared to the rest of the treatments. It is concluded that the consortium *Methylobacterium* sp. (L10) - *Advenella* sp. (L21), used in the germination of *Handroanthus ochraceus*, significantly increases germination and obtains seedlings with the best general condition compared to the rest of the treatments, demonstrating the promising potential of bacterial consortia in enhancing the growth of *Handroanthus ochraceus*.

Palabras clave: Yellow lapacho - Bacterial Consortium – Germination - native bacteria -in vitro culture