ILS4

Fourth International Legume Society Conference 2023

19-22 September

Granada Conference Center

Granada Spain

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LEGUME SOCIETY

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Summary:

Objectives, Description, Main Results & Conclusions

Legumes have capacity to stablish N2-fixing symbiosis with rhizobia reducing the use of polluting nitrogen fertilizers, decreasing greenhouse gas (GHG) emissions and protecting ground water from toxicity while improving soil fertility. The use of N-fixing bacteria is not generalized due to their specialization in the symbiotic association with legume species, being a priority the availability of promiscuous bacteria capable of nodulating with different legumes. Due to the interest that these bacteria represent for agriculture, being used as inoculants (bio-fertilizers) for crops, extensive research has been carried out on this symbiotic system.

The objective of this research was to study the nodulation capacity of Burkholderia alba (Lee et al. 2018) found in the soils of the MBG-CSIC in 2020. An experiment has been carried out in greenhouse with 17 different legumes (common bean, pea, chickpea, pigeon pea, cowpea, soybean, vetch, bitter vetch, yellow vetch, lentil, red pea, lucerne, faba bean, carob, grass pea, peanut and blue lupine) under 3 different conditions, a control 0, a control N and inoculated with B. alba.

B. alba was isolated from common bean, cowpea and pea nodule and identified by molecular techniques. In chickpea, soybean and lucerne no nodules were found in their roots. It seems that B. alba is a bacterium that persists in the seed since it also appears in the 0 and N control plants. Initial data indicate that B. alba could be a promiscuous bacterium, capable of nodulating at least three different legume species. Its efficiency for symbiotic nitrogen fixation and its ability to promote plant growth need further research.

Bibliography

- *Lee JW, Kim YE, Park SJ. 2018. Burkholderia alba sp. nov., isolated from a soil sample on Halla mountain in Jeju island. J Microbiol 56 (5): 312–316. DOI 10.1007/s12275-018-8034-2*