

Could *Bacillus* and *Paenibacillus* be used to control fungal pathogens on Peanut crop without altering symbiosis bacteria?

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ABSTRACT

More than 55 pathogens, mainly fungi, have been reported to affect Peanut yields and quality of the groundnut produced under tropical climate. To control these pathogens without using synthetic pesticides, some Bacillaceae may be used as biocontrol. The aim of the present study was to select *Bacillus* or *Paenibacillus* strains which can efficiently fight fungal pathogens of this crop without affecting Rhizobia growth involved in nitrogen symbiotic fixation.

Bacillus velezensis GA1, *B. v.* S499, *B. v.* QST713, *B. v.* FZB42 and *Paenibacillus polymya* 56 were tested as *Arachis hypogaea* L. growth promoting rhizobacteria. The potential growth of these bacteria and Cyclic Lipopeptides production were tested using *A. hypogaea* root exudates as the main source of nutrient. These tested strains were also confronted against six fungal pathogens as well as against three Rhizobia.

All *Bacillus velezensis* were able to growth in environment containing *A. hypogaea* root exudates (0.3-0.4 OD) and to produce Surfactins and Iturins. It has been demonstrated, in previous research, that these Lipopeptides produced are involved in microbe colonization of rhizoplane, in the induction of systemic resistance in the host plant and can antagonize the growth of soil-borne pathogens. Antifungal activity was equally for GA1, S499, FZB42 and QST713 while less for Pp56. *Bacillus velezensis* GA1 and S499 were compatible in co-cultivation with *Bradyrhizobium arachidis*.

The use of *Bacillus velezensis* GA1 and S499 as PGPR is proving, *in vitro*, to be an effective means to fight against fungal pathogens on Peanut crop without altering the potential of symbiotic nitrogen fixation in Rhizobia-*A. hypogaea* system.

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