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SCREENING OF CERTAIN RHIZOBACTERIA FROM *HEVEA BRASILIENSIS* FOR GROWTH PROMOTING ACTIVITIES

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Seventy nine IAA producing rhizobacteria, isolated and selected from rubber plants, were screened to identify efficient isolates under polybag conditions. The IAA production of the isolates in sucrose minimal salts medium was in the range of 0.48 - 62.84 μg mL^{-1}. Ten mL of each culture containing 10^8 cfu mL^{-1} was inoculated to the rubber seedlings in three splits at monthly intervals from transplanting of the germinated seedlings to the polybags along with uninoculated control plants. After six months growth, the plants were uprooted and measured various growth parameters. Out of the 79 isolates evaluated, 12 isolates showing more growth improvement of the seedlings were selected. They were the medium IAA producers (in the range of 4.08 - 25.46 μg mL^{-1}). All these isolates showed phosphate solubilising efficiency in Apatite agar medium. They solubilised $Ca_3(PO_4)_2$ and Al PO_4. $FePO_4$ solubilisation was shown by ten isolates and was less than the other two sources of phosphates. Three isolates *viz*. RB 88, Ri 25 and RH 104 showed the solubilisation of Raj phos, the sparingly soluble form of fertilizer. Eleven isolates showed medium to high levels of ammonia production and low to medium levels of phosphatase activity. Nine isolates showed low to high levels of siderophore production. All the isolates showed antagonistic activity against at least one of the five major rubber pathogens tested in dual culturing. The study showed that the top ten IAA producers were not included among the 12 selected isolates. The study suggests that a combination of different mechanisms, other than IAA production alone, may be involved in regulating and optimizing the plant promoting effects of root colonizing bacteria, the role of which under field conditions is to be further investigated.

Keywords: Growth promoting activity, Indole acetic acid, Rhizobacteria

INTRODUCTION

Plant growth in agriculture soil is influenced by myriads of abiotic and biotic factors. The roots support a large and active microbial population capable of exerting beneficial, neutral or detrimental effects on plant growth. The importance of root colonizing bacteria for maintenance of root health, nutrient uptake and tolerance of environmental stress is well recognised (Bowen and Rovira, 1999; Cook, 2002). The plant growth promoting rhizobacteria (PGPR) have been reported to enhance plant growth directly by a variety of mechanisms.

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