TRANSPOSONS, PLASMIDS AND BACTERIOPHAGES AS TOOLS IN GENETIC ANALYSIS OF RHIZOBIUM FROM SESBANIA ROSTRATA

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Sesbania rostrata, a tropical legume which forms nodules on both the roots and the stems, was reported to have a high nitrogen fixing potential(1). The Rhizobium strain isolated from stem nodules is capable of growing in culture on atmospheric nitrogen, so that it appears to be an extremely useful Rhizobium for genetic research on N_2 fixation (2).

Since the use of transposon mutagenesis is a powerful tool to generate mutants with altered symbiotic properties, we tried to introduce Tn5 (Km^R) transposon in the stem strain ORS 571 using the "suicide" plasmid pJB4JI ($gent^R$, Mu, Tn5) (3). We obtained $Km^R Gent^S$ transconjugants at a frequency of 10^{-7} per recipient. The characterization of the transconjugants obtained is currently being investigated.

Since plasmids are known to play a role in the control of the symbiotic properties of a number of Rhizobium (4), we attempted to detect the presence of plasmids in a strain isolated from stem nodules (root strain ORS 502). The root strain was found to carry a plasmid for ca. 100×10^6 daltons, whereas the stem strain did not show any plasmid.

To explore the possibility of using bacteriophages for the genetic study of Rhizobium strains from S. rostrata, we sought to isolate and characterize specific phages. Up to now, we have isolated an icosahedric phage to the stem strain ORS 571.

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