

RESEARCH ARTICLE

Chickpea rhizobia symbiosis genes are highly conserved across multiple *Mesorhizobium* species

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KEYWORDS

rhizobia • chickpea • *nifH* • *nodC* • lateral gene transfer • symbiosis genes

ABSTRACT

Chickpea has been considered as a restrictive host for nodulation by rhizobia. However, recent studies have reported that several *Mesorhizobium* species may effectively nodulate chickpea. With the purpose of investigating the evolutionary relationships between these different species with the ability of nodulating the same host, we analysed 21 Portuguese chickpea rhizobial isolates. Symbiosis genes *nifH* and *nodC* were sequenced and used for phylogenetic studies. Symbiotic effectiveness was determined to evaluate its relationship with symbiosis genes. The comparison of 16S rRNA gene-based phylogeny with the phylogenies based on symbiosis genes revealed evidence of lateral transfer of symbiosis genes across different species. Chickpea is confirmed as a nonpromiscuous host. Although chickpea is nodulated by many different species, they share common symbiosis genes, suggesting recognition of only a few Nod factors by chickpea. Our results suggest that sequencing of *nifH* or *nodC* genes can be used for rapid detection of chickpea mesorhizobia.

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