NRCPB10. A partial sequence 16S rRNA gene sequence of strain NB4 was deposited in the GenBank database as Agrobacterium pusense RP 1 (accession number MT670424.1). To elucidate phylogenetic relationships, a neighbor-joining (NJ) tree was constructed using GenBank and EzTaxon databases (Figure 5). This analysis confirmed that strain NB4 belongs to the same species as *Agrobacterium pusense.*

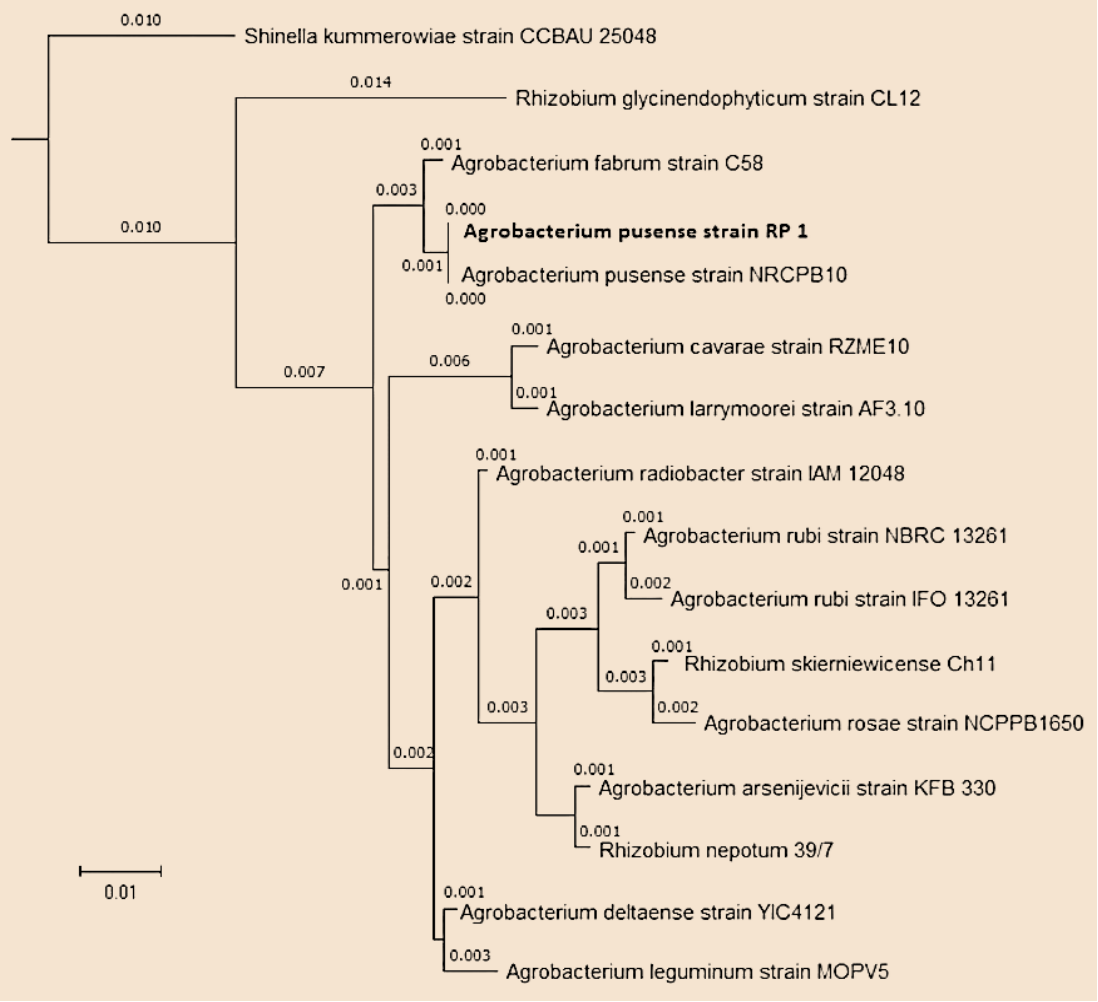

Figure 5. The phylogenetic topology of *A. pusense* RP 1 with the genus *Agrobacterium* used NJ.

CONCLUSION

Utilizing biofertilizers as an alternative to chemical fertilizers is crucial for ensuring food safety and security. Adopting these eco-friendly techniques will have a profound impact on the sustainability of agricultural practices, contributing to enhanced human well-being. This research lays the groundwork for developing an innovative biofertilizer, offering an economically viable and environmentally sustainable solution for advancing sustainable agriculture.

List of Abbreviation: CFU: colony-forming unit, BLC: bacterial liquid culture, FGP: final germination percentage, MEGA: molecular evolutionary genetic analysis, NJ: neighbor-joining, PGPR: plant growth-promoting *rhizobacteria.*

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