Streptomyces rhizobacteria enhance the growth of *Quillaja lancifolia*

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Quillaja lancifolia D. Don is a tree species native to South America and is recognized as a significant source of high-value triterpenoid saponins. Strategies that promote plant growth and enhance the synthesis of bioactive saponins are of considerable commercial interest. *Streptomyces* bacteria are well known for their ability to produce a wide range of secondary metabolites and for exhibiting plant growth–promoting traits, highlighting their high potential for the development of novel bioproducts. This study aimed to promote plant growth and saponin metabolism in *Q. lancifolia* using autochthonous *Streptomyces* isolates. From rhizosphere samples of *Q. lancifolia*, 22 *Streptomyces* isolates capable of producing indolic compounds and siderophores were obtained. Based on functional screenings for phosphate solubilization, indolic compound production, siderophore production, and ammonia production, three isolates (CLV374, CLV381 and CLV382) were selected for plant assays. These isolates were characterized, identified at the genus level by 16S rRNA gene sequencing, and subsequently applied to *Q. lancifolia* plants. Plants inoculated with *Streptomyces* isolates CLV374 and CLV381 exhibited the highest biomass increment (58.92% and 75.38%, respectively), compared to the control. Conversely, CLV382 increased only 14.14% of dry root biomass. Isolate CLV382 induced the exudation of reducing sugars by plant roots. The *Streptomyces–Quillaja* interaction enhanced plant development, highlighting the potential of selected isolates as promising bioinoculants for biomass production and saponin yield improvement.

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