

Research Article

Cloning and Transformation of *CStr1* Antibiotic Gene from *Streptomyces roseus* for the Management of Brown Leaf Spot in Rice incited by *Helminthosporium oryzae*

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Abstract

Rice seeds when treated with *Streptomyces* sp. showed significant increases in per cent germination, root length, shoot length and seedling vigour. Among the twenty isolates of *Streptomyces* sp. tested, the isolate CStr 1 was the most effective in promoting plant growth. The *Streptomyces* sp. isolate Str1 recorded a vigour index of 518.40. In the present investigation, out of the twenty rhizospheric actinomycetes isolates, all isolates were confirmed as *Streptomyces* at the genus level based on the PCR amplification of the DNA using genus specific primers which yielded an amplicon size of 620 bp. The partial sequence of DNA of seven isolates from rice rhizosphere showed 99-100 per cent similarity to *Streptomyces* sp in the NCBI database. The isolate Str 1 showed 100 per cent identity to *S. roseus* respectively in the NCBI database. . Western blot analysis of leaf samples from rice plants showed that barley chitinase antiserum was able to recognize a protein with sizes of 42 kDa. The antibiotics identified as 4H-1-Benzopyran-4-one, 2-(3,4-dihydroxyphenyl)-6,8-di- α -D-glucopyranosyl-5,7-dihydroxy- (CAS) with molecular formula C₂₇H₃₀O₁₆.

Key words: Antibiotic gene, chitinase, *Helminthosporium oryzae*, *Streptomyces roseus*, western blotting rice

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