



Isolation and Identification of Bacterial Strains with Strong Antifungal Activity

Sudhansu Sekhar Patra *

MITs School of Biotechnology, Utkal University, Bhubaneswar, Odisha

*Corresponding author: Sudhansu Sekhar Patra, Department of Biotechnology, Utkal University, Bhubaneswar, Odisha, India. E-mail: sudhansupatra18@gmail.com

Received: July 27, 2021; Accepted: August 14, 2021; Published: August 21, 2021

Abstract

Stenocarpella maydis and *Stenocarpella macrospora* are the proof that one thing definitely causes another agents of ear rot in corn, which is one of the most destructive sicknesses in this crop worldwide. These fungi are important mycotoxin producers that cause different the study of diseases in farmed animals and represent an important risk for humans. In this work, strains were separated far from others from soil of corn crops of which showed drug that fights fungus infections activity against these phytopathogens, which, were identified as: *Germ subtilis*, *Pseudomonas* spp., *Pseudomonas fluorescens*, and *Pantoea agglomerans* by putting in correct order of 16S rRNA tiny chemical assembly instruction inside of living things and the phylogenetic analysis. From cultures of each strain, outside of a cell filtrates were gotten and tested to decide out drug that fights fungus infections activity. The best filtrates were gotten in the unmoving phase of *B. subtilis* cultures that were stable to the temperature and extreme pH values; in addition they did not show a cytotoxicity effect against salt water shrimp and stopped beginning of growth of conidia. The bacteria described in this work have the possible ability to be used in the control of white ear rot disease.

Keywords: *Stenocarpella*; *Biological control*; *Bacillus*; *Pseudomonas*; *Pantoea*

Introduction

The fungi *Stenocarpella maydis* and *S. macrospora* cause the white ear rot of corn disease, which is one of the most damaging to corn crops around the world. The signs of sickness are shown/are obviused many weeks after infection, affecting mainly the root, stalk, and cobs that later show a white cottony fungal growth. It is also possible to notice the presence of pycnidia, which is the source for the spreading of the disease. When the signs of sickness are shown obviused in the stalk, the internodes show a dark brown color; in this case, the plants become weak and are easily broken by rain and strong winds. The life cycles of both fungi are almost the same; the difference is that *S. maydis* is present in cooler areas because conidia lose their ability to be done at high temperatures and by exposure to sunlight [1]. These fungi, on the other hand, are key mycotoxin producers in stored grains. *S. macrospora* produces diplodiol, a mycotoxin that causes death in chickens and chicks [2]. While *S. maydis* makes/creates diploidiatoxin, the proof that one thing definitely causes another agent of diplodiasis, a neuromycotoxicosis, is seen as nerve-based changes such as ataxy, state of being unable to move, and

liver-related damage in cows, bulls, etc. fed with the infected corn. This poisonous effect has been followed in other farm and laboratory animals.

Although different very tiny living things can be used as related to the body function of living things control agents, important events or objects that prove something exists related to the role of germ-killing substance production by bacteria separated far from others from the soil, such as things that hold down and stop and stoppers in the development of phytopathogens [3]. Related to the body function of living things control of *S. maydis* and *S. macrospora* has been accomplished or gained with effort at the experimental level with different strains of actinomycetes with the possible ability to become a tool for the reduction of disease.

The use of other types of bacteria to control these fungi has not been reported yet. In this work, we provide information on the being completely separate from others and identification of bacteria separated far from others from the rhizospheric soil of corn crops with fighting-related activity against *S. maydis* and *S. macrospora* with the possible ability to be used in the related to the body function of living things control of these fungi [4].

Conclusion

The described bacterial strains have the potential to operate as biological control agents. Because of their potential to create endospores that can last for years, *B. subtilis* strains are the most promising. It can survive in the soil for long periods of time and can be easily manufactured at a minimal cost on an industrial scale. This is significant for product preparations in which antifungal filtrates stable to heat and pH changes can be used to control the illness early on and to produce spores that can be injected into the soil to avoid future infections in cultivars [5].

The described bacterial strains have the potential to operate as biological control agents. The strains of *B. subtilis* that produce endospores that can stay in the soil for long periods of time and can be easily produced at a low cost on an industrial scale are the most promising. This is significant for product preparations in which antifungal filtrates stable to heat and pH changes can be used to control the illness early on and to produce spores that can be injected into the soil to avoid future infections in cultivars.

REFERENCES

1. McGee DC. Maize Diseases: A Reference Source for Seed Technologists; The American Phytopathological Society: St. Paul, MN, USA, 1988.
2. Bensch MJ, van Staden J. Ultrastructural histopathology of infection and colonization of maize by *Stenocarpella maydis* (*Diplodia maydis*). J. Phytopathol. 1992;136:312–318.
3. Cutler HG, Crumley FG, Cox RH, et al. Diplodiol: A new toxin from *Diplodia macrospora*. J Agric Food Chem. 1980;28:135-138.
4. Blaney BJ, Mannion PE, Tuder GD, et al. Examination of *Diplodia maydis* infected maize for toxicity to chicken and cattle. Aust Vet J. 1981;57:196-197.
5. Kellerman TS, Rabie CJ, van Der Westhuizen, et al. Induction of diplodiosis: A neuromyco-toxicosis in domestic ruminants with cultures of indigenous and exotic isolates of *Diplodia maydis*. Onderstepoort J Vet Res. 1985;52:35-42.