Anti-fungal activities of KACC91176 against clubroot

Hye Sook Kim, Yong Sub Yi[1], Gyung Ja Choi[2], Kwang Yun Cho[2], Yoongho Lim
Bio/Molecular Informatics Center, Konkuk University
[1]Seoul University of Venture and Information
[2]Screening Division, Korea Research Institute of Chemical Technology
TEL: +82-2-450-3760, FAX: +82-2-453-3761

Abstract

Clubroot was called finger and toe because of its symptoms, which was known for several centuries. The disease affects crucifers family and is spread in temperature climates. The remarkable symptom of clubroot is distorted and swollen roots which result in reducing the ability to absorb water. Infection of young plants cause death because of rapid progress of disease. In adult plants, they cannot grow. The leaves of infected plants become yellowish or wilted. It is caused by Plasmodiophora brassicae1). Once P. brassicae infests soil, it remains several years without its hosts. Most susceptible hosts are cabbage, Chinese cabbage, broccoli, and radish. Of these, cabbage and radish are used for Korean tranditional food, Kimchi, so that the loss by clubroot can be very serious in Korea. P. brassicae can survive in soil as resting spores which are spread through infested soil, infected plants and wondering livestock. To germinate resting spores, moist and acidic soil is required. Its rapid development needs soil temperature between 18 - 25?. During the development, new zoospores are produced. A few chemical pesticides are used for the control. However, because of consumer's rejection development of biological pesticides is required. Authors screened lots of microorganisms to discover novel bio-pesticides. Of them, KACC91176 was isolated from

soil in Ilgaho at Konkuk University, Seoul. It showed strong activity against P. brassicae. We identified it based on 16S rDNA analysis and scanning electron microscopy.

Reference

1. Devos S, Vissenberg K, Verbelen JP, Prinsen E. Infection of Chinese cabbage by Plasmodiophora brassicae leads to a stimulation of plant growth: impacts on cell wall metabolism and hormone balance (2005). New Phytol. 166(1), 241-50.