

Control of gray mold disease of tomato caused by *Botrytis cinerea* using bacterial secondary metabolites

ABSTRACT

Gray mold disease is caused by *Botrytis cinerea* and it is the most significant and devastating disease affecting tomato cultivation worldwide. This disease was recently reported infecting tomato fruits in Cameroon Highland, Pahang. Biocontrol agents have been proven to be effective towards many phytopathogens. In this study, 43 bacterial isolates were screened against *B. cinerea* in-vitro. Five isolates with more than 65% inhibition of radial growth (PIRG) were selected for the subsequent experiments. Findings in dual culture assay revealed that BM11 and BC4 were the most effective biocontrol agent, with PIRG of 82.5% and 71.8%, respectively. BM11 and BC4 isolates were identified using the 16S rDNA gene. The identification results found that BM11 and BC4 were *Pseudomonas protegens* and *Brevibacterium casei*, respectively. Ten major bioactive compounds were successfully identified by Gas chromatography-mass spectrometry (GC-MS) from the culture filtrate of both biological control agent (BCA) isolates. These bioactive compounds may responsible for antifungal activity. In vivo study revealed that culture filtrate extract manages to suppress disease lesions on the treated tomato fruit from 0.86 - 1.03 cm, 30 days after inoculation. Based on overall findings suggested that *P. protegens* and *B. casei* were the promising BCA in controlling gray mold disease of tomato fruit.

Keyword: Tomato fruit; Gray mold disease; Secondary metabolites; GC-MS; Biological control