

Inhibition of *Ralstonia Solanacearum* by *Warburgia Ugandensis* Stem Bark And Leaf Crude Extracts Obtained Using Organic Solvents

Authors.

Oliver Libese Lideke Department of Agriculture; Meru University of Science & Technology

Eric G. Mworia Department of Agriculture; Meru University of Science & Technology

Cynthia Mugo Mwenda Department of Biological Sciences; Meru University of Science & Technology

ABSTRACT

Ralstonia solanacearum is a soil-borne bacterial pathogen that poses significant threat to the Solanaceae family and other crops. It causes widespread bacterial wilt, a devastating disease that affects the plant's water transport system, leading to wilting and death. Numerous chemical agents and treatment methods have been employed in attempts to control *R. solanacearum*, but are ineffective. The study aimed to determine the in vitro efficacy of *W. ugandensis* stem bark and leaf crude extracts against *R. solanacearum*. *W. ugandensis* stem bark and leaf crude extracts were obtained using organic solvents viz. methanol, ethanol, dichloromethane and hexane. In vitro, antagonistic activities against *R. solanacearum* of all organic crude extracts of *W. ugandensis* were determined by standard agar well diffusion assay on Kelman's 2, 3, 5- triphenyl tetrazolium chloride medium in triplicates. Two-way analysis of variance (ANOVA) was used in the statistical analysis of the mean diameter inhibition zones. All the organic solvents crude extracts of *W. ugandensis* were inhibitive against *R. solanacearum*. However, the stem bark crude extracts exhibited significantly higher efficacy against *R. solanacearum* compared to the leaf crude extracts. The crude extracts were subjected to a serial dilution to determine the minimum inhibitory concentration (MIC). *W. ugandensis* stem bark dichloromethane crude extracts had the lowest MIC of 1 mg/ml. *W. ugandensis* stem bark dichloromethane crude extracts were most effective against *R. solanacearum*. Further research is important to determine the bioactive compounds against *R. solanacearum* in *W. ugandensis* stem bark dichloromethane crude extracts.

Keywords:

Ralstonia solanacearum, crude extracts, *Warburgia ugandensis*, minimum inhibitory concentration