Catharanthus roseus extract as bio-fungicide for controlling Fusarium oxysporum on selected vegetable seedlings

ABSTRACT

Catharanthus roseus extracts were studied to evaluate their potentials replacing chemical fungicide which give a bad impact on human health and cause environmental pollution problems. The samples of C. roseus were extracted with different extraction solvents including dichloromethane (DCM), acetone, ethanol, and methanol at 5, 10, 15 and 20 mg/mL concentrations. The solvents without the plant extract were used as the controls. After 6 days of incubation, the inhibition zone of the fungal pathogen on PDA media was measured. The extracts were significantly effective ($p \leq 0.05$) in limiting the antifungal activities. The DCM extract of C. roseus was the most effective against Fusarium oxysporum with 8.06 mm compared to acetone (0.055 mm), ethanol (0.15 mm), methanol (0.41 mm), and water (0.06 mm). Among of the concentrations, 20 mg/mL gave the best effect to control the fungal pathogen compared to 5, 10 and 15 mg/mL. The C. roseus extract was also effective in controlling F. oxysporum on the selected vegetable seedlings based on leaf number and disease suppression (%) results. However, without treated with the extract; mortality due to F. oxysporum increased. The C. roseus extract was effective and may to be developed as a bio-fungicide agent to control F. oxysporum in the field.

Keyword: Plant solvent extract; Extract concentration; Antifungal activity; Pathogenicity test; Plant extract application