Bio-organic fungicide of Catharanthus roseus stems extract inhibit the growth of Fusarium oxysporumon Capsicum annum seedling

Abstract

Fusarium oxysporum is a well-known fungus that causes a major commercial plant disease in the world. Due to the issue, the antifungal activity of Catharanthus roseus stems extract as bio-organic fungicide against F. oxysporumon Capsicum annum seedling was studied. The spore suspensions of F.oxysporum and C. roseusstems extract were prepared to study the minimum inhibitory concentration (MIC) and minimum fungicidal concentration (MFC) tests in the laboratory. The application of C. roseus stems extract at the concentrations of 100, 500, 1,000, 1,500 and 2,000 µg/mL against F. oxysporum were included in the in-vitro study. For in-vivo test, F. oxysporum on C. annum seedlings were applied with the plant extract at concentrations of 1,000, 1,500 and 2,000 µg/mL in greenhouse study. The result showed that the extractwith2,000 µg/mL has higher significant difference ($p<0.05$) inhibited the growth of F. oxysporum plant fungal compared to other concentrations of MIC tested. The MFC test indicated that day nine was proven to have high negative impact of the fungal than day six. In in-vivo study, the antifungal activity showed 100% effect of disease injury for the growth of C. annum plant species in green house. The result also showed that the concentration of C. roseus stems extract at 2,000 µg/mL has significantly higher ($p<0.05$) activity against F. oxysporum on the seedlings compared to other concentrations. Thus, the study indicated that C. roseus stems extract has novelty of bio-organic compounds that contribute to the development of new antifungal agents to protect crop plants from fungal disease which also safe to environmental ecology compared to other commercial chemical fungicide which is highly used nowadays.

Keyword: Catharanthus roseus; Stems extract; Antifungal activity; Bio-organic fungicide; Fusarium oxysporum; Capsicum annum; Seedling