Abstract

The study was conducted to select the optimal condition for induce endospore of antagonistic bacteria for biological control of soil borne diseases of *Curcuma alismatifolia*. The efficacy of 4 antagonistic bacteria that suppress growth of soil borne diseases of *C. alismatifolia* were using to produce the powder formulation. Condition for induces endospore of antagonistic bacteria including media, times and pH for culturing were tested. Results showed that the optimum medium for induce endospore of antagonistic bacteria 4 strains was PDB (Potato dextrose broth), the isolate MTR13 and PS6 were culture for 4 days in PDB medium at pH 4 and 6 respectively. Culturing in PDB medium at pH 5 and 4 for 5 days were the most effective for sporulation of isolate MTR14 and NS5 respectively. Rice flour based formulations of all antagonists were able to maintain cell viability over a long times (3 months) than other carrier. *In vitro*, the efficacy of bio-product to suppress growth of *Pythium aphanidermatum* showed R (Rice flour) and RYE (Rice flour+0.25%YE) of MTR13 and MTR14 were the best formulation to inhibit the mycelial growth. While CYE (cassava flour+0.25%YE) of NS5 and PS6 showed the greatest formulation effect to the mycelia growth. The inhibitory effect of bio-product (RYE (Rice flour+0.25%YE) of antagonistic bacterial isolate MTR13 and NS5) against *Ralstonia solanacearum* were found to be the best formulation. Then, RYE (Rice flour+0.25%YE) of antagonistic bacterial isolate MTR13 and NS5 were used to test in greenhouse compare with chemical and commercial bio-product. In greenhouse experiments, the plants treated with 0.5 and 1 gram of RYE formulation of MTR13 reduced the wilt incidence at 35.29% and 41.17% respectively. In greenhouse study, the most effective treatment in this study was poured with MTR13 RYE solution directly on the soil to the base of seedlings at the rate of 50 ml per plant and application every months during active growth. This treatments *reduced significantly* the *disease severity* by 66.67 percent when compared to untreated control