ABSTRACT

The aims of this study were to search for antagonistic bacilli that had ability against some plant pathogens and to investigate their species diversity. Rice grain, soils from seed production fields and fruits peel were sampled and they were processed individually by dilution plate method after pre-condition (5 min. boiled, 48 hrs. incubation). Totally 446 bacillus isolates obtained and all of them were tested against 5 plant pathogens, *Colletotrichum gloeosporioides*, *Didymella bryoniae*, *Fusarium oxysporum f.sp. lycopersici*, *Sclerotium rolfsii* and *Ralstonia solanacearum* by dual culture method. Of these 446 isolates, 301 isolates had antagonistic effect against *C. gloeosporioides*, *D. bryoniae*, *F. oxysporum f.sp. lycopersici*, *S. rolfsii* and *R. solanacearum* with the total number of 207, 185, 177, 160 and 145 isolates, respectively. The maximum inhibition zone for each pathogen was 7.9 (± 0.04), 7.6 (± 0.08), 9.0 (± 0.00), 8.2 (± 0.48) and 7.8 (± 0.03) mm., respectively.

Forty nine selected isolates, 39 best isolates had ability to inhibit tested pathogens and 10 isolates had not, were investigated further for species diversity based on morphological characters, biochemical properties and amplified ribosomal DNA restriction fragment analysis (ARDRA). By morphological characters and biochemical properties, the selected isolates could be distinguished to nine species, in which sixteen isolates were *B. megaterium*, 10 isolates were *B. subtilis*, 8 isolates were *B. circulans*, 5 isolates were *B. polymyxa*, 4 isolates were *B. sphaericus*, 2 isolates were *B. brevis*, 2 isolates were *B. cereus*, 1 isolate were *B. firmus* and 1 isolate were *B. licheniformis*. In contrast, the ARDRA technique could not distinguished *B. megaterium*, *B. subtilis*, *B. circulans*, *B. sphaericus*, *B. brevis*, *B. cereus*, *B. firmus* and *B. licheniformis*. However, the ARDRA technique clearly distinguished *B. polymyxa* as a unique species which recently known as *Paenibacillus polymyxa*. In summary, the ARDRA technique can be used properly at the genus level and needs more works to persuade the deeper levels.