SECTION D

827/D

Evaluation of antibacterial and antifungal activity of mustard (*Brassica juncea* L.) genotypes in Sri Lanka against pytopathogenic bacteria and fungi

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Mustard (*Brassica juncea*) has long been used in Sri Lanka as a condiment, cooking oil and as an Ayurvedic herbal oil. Sri Lanka has a genetically diverse mustard germplasm collection. There is a growing interest to study the yield potential, seasonal adaptations and oil quality of local mustard (*B. juncea*) genotypes. Mustard is susceptible to many fungal and bacterial infections which cause serious damage to plants resulting in yield loss. Antibacterial and antifungal activity of twenty mustard accessions obtained from the Plant Genetic Resource Centre was studied to evaluate their disease resistance/susceptibility to pathogenic bacteria, *Erwinia carotovora* and *Xanthomonas campestris* causing bacterial soft rot, leaf spot and black rot and pathogenic fungi *Colletotrichum higginsianum* and *Alternaria brassicicola* causing anthracnose and black spot in mustard. Mustard accessions were planted in a green house at the Open University, Nawala. Each mustard accession was harvested four weeks after germination and the whole plant (15 g) was extracted in Methanol. Concentrated plant extracts were separated on TLC plates and R_f values were calculated for each accession. TLC plates were sprayed with spore suspensions of each fungus. Clear zones displaying fungal inhibition on TLC plates were observed for antifungal activity. Disc diffusion assay using sterile filter paper discs (7 mm) impregnated with mustard plant extracts were used for antibacterial study and activity was evaluated by the extent of inhibition zone formed against two pathogenic bacteria. For antifungal and antibacterial assays, five readings were taken for each accession and comparisons of means were made at $\alpha = 0.05$ level. Four mustard accessions, 5181, 5184, 7789, and 9724 with inhibition zones at R_f values 0.60 - 0.85 showed a significantly high antifungal activity against two pathogenic fungi. Sixteen accessions had no significant antifungal activity. Five accessions, 327, 346, 5181, 5184, and 7814 showed a significantly high antibacterial activity (11-13 mm inhibition zone) against two pathogenic bacteria. Fifteen accessions showed no significant antibacterial activity. *In vitro* antibacterial and antifungal assays with twenty different mustard accessions showed that many are susceptible to bacterial and fungal pathogens tested, but 4 - 5 accessions showed resistance. Mustard accessions 5181 and 5184 were active against all pathogenic fungi and bacteria tested. However, to confirm the present findings and identify resistant mustard genotypes, further *in vitro* and *in vivo* studies are necessary.

Keywords: antibacterial and antifungal activity, *Brassica juncea*