Session G
ANTIBIOTIC EFFECT OF GLUCOSINOLATES AND DERIVATIVES ON DIFFERENT BRASSICA DISEASES

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Brassica crops are affected by several diseases worldwide. Xanthomonas campestris, Pseudomonas syringae, Alternaria brassicicola and Sclerotinia sclerotiorum cause important damages in these crops. Glucosinolates are secondary metabolites derived from aminoacids with effect on the resistance to pests and diseases. The objective of this work was to evaluate the effect of 17 glucosinolates and their derivatives isothiocyanates on the development of abovementioned fungus and bacteria. Each pathogen isolate was grown in a Petri dish and replicated five times. On each dish, five discs were laid with different concentrations of each compound together with a blank disk and a gentamicin disk. The effect of the glucosinolate was measured as the diameter of growth inhibition. All compounds showed an inhibitory effect, which increased with higher concentrations. There was a high variation for inhibition among pathogen isolates and compounds. In general, glucobrassicin and gluconapin had an important effect on all pathogens, being benzyl isothiocyanate and gluconapin isothiocyanate the compounds which showed the weakest effect. Gluconapin was the most effective compound against Pseudomonas isolates. Glucorafanin was also very effective against one race of Pseudomonas. Related to Sclerotinia, differences between compounds were minor than with other pathogens, being glucobrassicin and allyl isothiocyanate, the compounds which showed the highest effect. The growth of Alternaria was inhibited mainly by indol-3-carbinol.

The inhibitory effect of glucosinolates on Xcc, was race-dependent (9 different races described). The most common races (1, 4 and 6) were together inhibited by glucobrassin and gluconapin. Sinalbin, glucoerucin and sinigrin had also an inhibitory effect on races 1, 4 and 6, respectively. The rest of the races were inhibited by different compounds.

The results showed that glucosinolates had an important effect on the development of two bacterial and two fungal brassica diseases and that there is a high variation of the glucosinolate effect among and within pathogens.