

## Study of effect of methanol extracts of Garlic, Cinnamon and liquid smoke from tobacco waste on Inhibition of Tobacco Fusarium wilt of pathogen fungi

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### ABSTRACT

Tobacco Fusarium wilts of pathogen fungi are important phytopathogens distributed worldwide and can cause yield losses in tobacco growing countries. The management of fungal soilborne pathogens are accomplished through the use of pesticides, resistant varieties, biological control, and use of plant extracts is done. The use of plant extracts for management of this disease is preferable because pesticides are expensive and may pollute the environment. This design investigated the inhibitory effects of some medicinal plant extracts on growth of *Fusarium oxysporum* f. sp. *nicotianae* the cause of tobacco collar rot and selection of a suitable concentration is performed in the laboratory in Tirtash Research and Education Center in 2018. The plants (Garlic and Cinnamon) were extracted with methanol and liquid smoke used in this study was obtained from the pyrolysis of tobacco waste. Tobacco waste was pyrolyzed in furnace in the absence of oxygen and smoke was converted to liquid smoke with cold water. This study were carried out in factorial with three factors including: crude extracts (Garlic, Cinnamon and Tobacco waste) and 6 concentration (0, 250, 500, 1000, 2000 and 4000 ppm) based on Completely Randomized Design with 3 replications. The minimum inhibitory concentration of each extracts was determined by agar diffusion method. Results indicated that crude extracts of Garlic, Cinnamon and Tobacco waste (liquid smoke) have remarkable antifungal activity. With increasing concentrations of plant extracts, inhibitory effect on mycelium growth of fungal *F. o f. sp. nicotianae* increased. The minimum inhibitory concentration of liquid smoke of tobacco waste and methanol extracts of Garlic and Cinnamon on tobacco Fusarium wilt of against fungi were equal to 2000, 4000 and 4000 ppm, respectively. The liquid smoke of tobacco waste at concentrations greater than 2000 ppm has fungicide and methanol extracts of Garlic and Cinnamon at concentrations greater than 4000 ppm has fungistate.

**Key words:** Fusarium wilt, bioassay, Plant extracts, *Fusarium oxysporum* f. sp. *nicotianae*