

## POTENTIAL USE OF PLANT EXTRACT FORMULATIONS TO MANAGE CABBAGE RING SPOT PATHOGEN UNDER *IN VITRO* CONDITION

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### Abstract

The cabbage leaf spot disease causes great destruction to cabbage cultivation in the up country wet zone in Nuwara Eliya District in Sri Lanka. The disease is controlled by chemical fungicides, which cause many negative environmental and health effects. Bio controls of the pathogens by natural antifungal extracts are considered as desirable alternatives. However, in Sri Lanka, no any positive attempts have been explored yet to find the potential use of plant extracts as bio-fungicides against the cabbage leaf spot disease. Therefore, this study was carried out to identify the causative agent of cabbage leaf spot and to evaluate the potential effect of plant extract formulations to manage this pathogen under *in-vitro* conditions. Pathogen was isolated from leaf spot-infected cabbage leaves and identified by morphological and molecular procedures. Pathogenicity test was conducted to confirm the pathogen. Four concentrations of three plant extract formulations, namely clove (*Syzygium aromaticum*), nutmeg (*Myristica fragrans*) and a mixture of clove and jasmine (*Jasminum* sp.) were tested under *in vitro* conditions using food poisoning technique. The concentrations of the original formulation were identified as 10% of clove, 5% of jasmine and 5% of nutmeg. Colony diameter was measured at 3, 5 and 7 days after inoculation of the pathogen and inhibition percentage was calculated. Pathogen was identified as *Alternaria tenuissima* and confirmed through pathogenicity test. Among the tested plant extract formulations, clove with jasmine at the concentration of 50 µl/10ml of PDA from the original formulation showed the potential to inhibit the pathogen growth, followed by clove formulation with the concentration 50 µl/10ml of PDA. The lowest inhibition was recorded by nutmeg formulations that failed to inhibit the pathogen under *in vitro* conditions.

**Keywords:** Cabbage leaf spot disease, Clove, Jasmine, Nutmeg

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