

BANANA DISEASE CONTROL AS INFLUENCES BY AQUEOUS NEEM LEAVES EXTRACT AND MEDIA PH LEVEL UNDER IN VITRO CONDITION

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ABSTRACT

Banana (*Musa* spp.) is the most popular exported fruit in the world. The most ubiquitous cultivar of banana in the market is the 'Cavendish'. However, the world's most popular banana might soon go extinct due to outbreaks of *Fusarium* wilt disease. Thus, there is a need to identify the effects of different pH media and different concentrations of neem leaves extract to control the *Fusarium* fungus *in vitro*. In the first *in vitro* experiment, *Fusarium oxysporum* f. sp. *cubense* (*Foc*) fungus was grown in different pH levels (5.0, 5.5, 6.0, and 7.0) of potato dextrose agar (PDA) – pH 5.5 was designated the control pH; and in the second experiment, different concentrations of neem leaves extract (0 mL, 2 mL, 4 mL, 6 mL, 8 mL, and 10 mL) were added into 250 mL of PDA. Results from the first *in vitro* experiment revealed that both pH 5.0 and pH 7.0 had the same significant effect in controlling the colony radius, growth rate, and percentage inhibition of radius growth (PIRG) of *Foc*. Moreover, after 7 days of incubation, colony growth decreased while the PIRG increased significantly with increasing neem leaves extract rate from the second experiment. However, no significant difference of all parameters was recorded for both 8 mL and 10 mL extracts. Thus, the study showed that application of liquid neem leaves extract at 8 mL and 10 mL were effective at inhibiting *Fusarium* growth under optimum pH (pH 5.0 and pH 7.0). Due to planting conditions of banana plants and soil environment, the best concentration of neem leaves extract, 8 mL per 250 mL media, was suggested to be applied for field applications of banana under optimum pH 7.0 of the soil media.

Keywords: 'Cavendish', outbreaks, *Fusarium* wilt, fungus, colony, growth inhibition, planting condition