

## IN VITRO EFFECT OF INSECTICIDE ON EDIBLE MUSHROOM AGARICUS BISPORUS

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### ABSTRACT

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*Agaricus bisporus* are most commercial producing mushroom which is used as highly nutritional food. Many type of pest can damage mushroom which can affect the nutritional value of the mushroom. This pest can be control by pesticides but these should not be toxic for mushroom culture. This research paper is based on *in vitro* toxicity effect of two insecticide Acephate and Cartap hydrochloride on edible mushroom *Agaricus bisporus*. For this toxicity test first *Agaricus bisporus* mushroom maintained on potato dextrose agar (PDA) medium. Both insecticide was tested with *Agaricus bisporus* at 0,100,200,300,400,500 mg/50mL concentration in potato dextrose broth (PDB) and incubated at 30 °C. After the incubation culture was filtered and drayed for measuring mycelia weight. All the concentration of insecticide assayed in duplicate manner. According to observation and data *Agaricus bisporus* can easily grow in the presence of Acephate but Cartap hydrochloride inhibited the mycelia grow of mushroom.

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### INTRODUCTION

Mushroom is defined as “macro fungus” with distinctive fruiting body (Mondal *et al.* 2013) which are seasonal fungi and occupy diverse niches in nature in the forest ecosystem. Mushroom alone are represented by about 41,000 species, of which approximately 850 species are reported in India (Pushpa and Purushothama, 2012). Some species of mushroom are edible and poisonous and wild edible fungi have been collected and consumed by people for thousands of years (Korat *et al.* 2013). The *Agaricus bisporus* botton

mushroom is category of basidiomycetes which is most cultivation consumable among the edible mushroom (Nasiri *et al.* 2012). Edible mushroom have higher protein content, carbohydrate, vitamins and have low fat contents (Akyuz and Kirbag, 2010).

Phorid fly and its larvae can damage the mushroom by directly and indirectly. Adult of this insect are vector of *Agaricus bisporus* pathogen especially *Verticillium* spp.(Babar *et al.* 2012). Lycoriella mali is a major pest in mushroom industries in united state. Its larvae can damage mushroom mycelia and adult are vector of pathogen (Brewer, 1990).

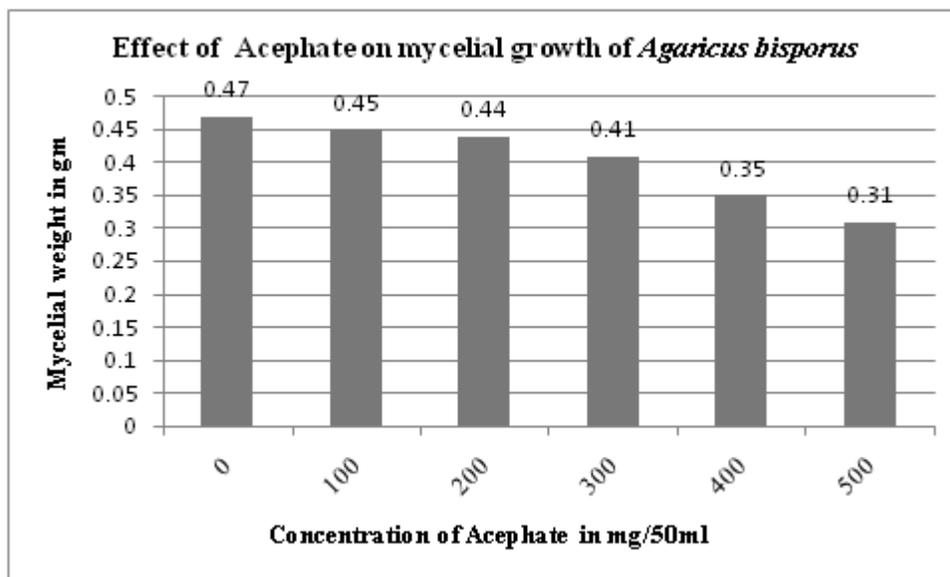


Fig. 1 Effect of different concentration of Acephate (insecticide) on *in vitro* mycelial growth of *Agaricus bisporus*.

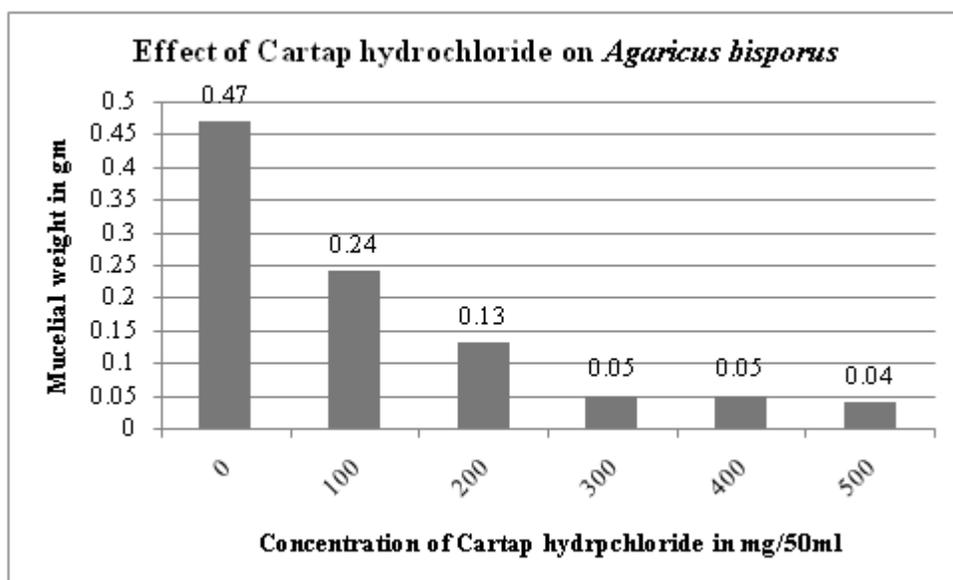


Fig. 2 Effect of different concentration of Cartap hydrochloride (insecticide) on *in vitro* mycelial growth of *Agaricus bisporus*.

Table 1. Effect of Acephate on *Agaricus bisporus*

Rate (mg/50mL)	Mycelial Weight (g)
0	0.47
100	0.45
200	0.44
300	0.41
400	0.35
500	0.31

Table 2. Effect of Cartap hydrochloride on *Agaricus bisporus*

Rate (mg/50mL)	Mycelial Weight (g)
0	0.47
100	0.24
200	0.13
300	0.05
400	0.05
500	0.04

Our main objective of this work is to commercially used pesticide is toxic or not for mushroom.

## MATERIALS AND METHODS

Potato Dextrose Broth (PDB) medium was prepared and sterilized and at 121 °C for 15 min. The medium was allowed to cool down and added antibiotic to resist bacterial growth. After that 100, 200, 300, 400, 500 mg pesticides added in 50 mL containing potato dextrose broth in separate flask for each concentration and pesticide and mixed it properly. Zero concentrations were taken as control without pesticide. After that pesticide containing medium was inoculated with *agaricus bisporus* by the help of cork borer which culture was maintained on potato dextrose agar for four days. After the inoculation it was incubated at 30 °C for six days. At the end of incubation mycelium were dried and weight recorded. Assayed was performed in duplicate set for each. (Olajire and Oluyemisi, 2009).

## RESULTS AND DISCUSSION

The toxicity test of two commercially used insecticides against edible mushroom *Agaricus bisporus* have done by comparing mycelia weight (Table 1 & 2). In these in vitro test we observed that Acephate is not highly toxic but in higher concentration it can partially affect the growth of *Agaricus bisporus* where is Cartap hydrochloride is toxic in lower concentration (100mg/50mL) and it is very highly toxic in higher concentration and totally inhibit the mycelia growth of *Agaricus bisporus*. Mycelial weight of *Agaricus bisporus* in different concentration (mg/50mL) of Acephate as follow 0 mg - 0.47g, 100 mg - 0.45g, 200 mg - 0.44g, 300 mg- 0.41g, 400 mg- 0.35g, 500 mg- 0.31g. Mycelial

weight of *Agaricus bisporus* in different concentration (mg/50mL) of Cartap hydrochloride as follow 0 mg- 0.47g, 100 mg- 0.24g, 200 mg- 0.13g, 300 mg- 0.05g, 400 mg- 0.05g, 500 mg- 0.04g.

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