

Amornsri Khun-in 2014: The Efficiency of Oyster Mushroom, *Pleurotus ostreatus* for Controlling Root-knot Nematode, *Meloidogyne incognita*. Doctor of Philosophy (Agriculture Research and Development), Major Field: Agriculture Research and Development, Faculty of Agriculture at Kamphaeng Saen. Thesis Advisor: Associate Professor Somchai Sukhakul, M.S. 100 pages.

Eighteen mushroom isolates were obtained from different growing sites in Thailand. The efficiency of mushroom cultures on egg mass infection of root knot nematode, *Meloidogyne incognita* indicated that *Pleurotus ostreatus* isolate Poa3 provided significantly higher colonized efficiency than other isolates. The infectivity (parasitism) of *P. ostreatus* isolate Poa3 on juvenile 2 was 37.25% after exposure for 96 h. The effect of culture filtrate obtained from *P. ostreatus* isolate Poa3 on egg mass was tested. The result showed that the culture filtrate at 25/100 dilution could completely kill (100%) *M. incognita* at 72 to 120 h after incubation. Application of culture filtrate onto tomato plants root effectively decreased galling inside roots and inhibited the hatching of nematode egg masses.

The media optimization on radial growth of *P. ostreatus* isolate Poa3 showed that PDA + 1% yeast extract medium provided the highest mycelial growth (9.00 cm at 6 days). Crude extract of *P. ostreatus* isolate Poa3 from column chromatography, and thin layer chromatography (TLC) gave 14 fractions. Each fraction was tested for egg mass hatching and mortality rate of *M. incognita*. Fractions 12 and 13 could decrease egg mass hatching and increase mortality rate of *M. incognita* *in vitro*.

Fractions 12 and 13 showed one spot on normal phase TLC with the R_f values of 0.52 and 0.58, respectively. Constituent analysis of fractions 12 and 13, the ^1H NMR data showed signal glucose and long chain hydrocarbon.

Student's signature

Thesis Advisor's signature