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TUBTIM LIMSOONTORN: WATER HYACINTH UTILIZATION IN OYSTER MUSHROOM CULTIVATION. THESIS ADVISORS: AURAPIN EAMSIRI, Ph.D., YONGYUTH SAIFA, M.Sc., PATANA THAVIPOKE, Ph.D. 100 p. ISBN 974-664-960-4.

The objectives of this research work were to cultivate oyster mushroom (*Pleurotus ostreatus* (Jacq.ex.Fr)) on water hyacinth (*Eichornia crassipes* (Mart.) Solms) medium and detect heavy metal in medium and mushroom. Principle substrate for mushroom cultivation in Thailand is sawdust. Once the problem of cultivation was expensive cost and lacked of substrate. Water hyacinth has rapid growth rate and accumulates heavy metal from water source. Its chemical composition has nutritional mushroom growth requirements such as cellulose, hemicellulose, lignin, nutrient, vitamin and plant hormone. Water hyacinth for this experiment were collected from Nakonchaisri river and then prepared as medium at the pH level as received, pH 7 and 8 of both the whole water hyacinth (shoot and root) and water hyacinth shoot (removed root) substrates in comparison with sawdust. All mushroom yields, growth rate, harvested crop, size and Bio-efficiency were recorded and Benefit/Cost ratio was calculated. Heavy metals accumulation was analyzed using ICP (Inductively Coupled Plasma).

The result of this research showed that water hyacinth shoot medium could not form fruiting body and the whole water hyacinth was not suitable for oyster mushroom cultivation. Although, the best yield was found on water hyacinth adjusted pH to 8 but its bio-efficiency and benefit/cost ratio were only 14.93 % and 0.16, which are lower than sawdust (22.10 and 1.06) and also the optimum bio-efficiency and benefit/cost ratio of 15 and 1. The concentrations of detected heavy metal in fruiting bodies were Cu (0.713), Cd (0.047), Cr (0.038), Mn (1.029) and Zn (1.855). All heavy metals found in mushroom are quite safely edible as the daily exposures calculated found to be lower than the standard recommended by USRDI (United States Reference Daily Intake) and dietary exposures of general UK population.