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The Thesis Submitted for M.Sc Degree
In the Field of Horticulture Science (medicinal plants)
**Possibility of optimal use of some plant residues for the production
of shiitake medicinal mushroom (*Lentinula edodes* (Berk.) Pegle) in
Sistan region**

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Abstract

Medicinal mushrooms have a high capacity for optimal use of agricultural and industrial wastes due to their initial saprophytic strength. In this study, in order to study the various wastes of agricultural and industrial industries for preparation as a substrate for shiitake medicinal fungus and also to study some morphological, yield (production of basidiocarp) and nutritional value of shiitake mushroom as the two-factor was performed in a completely randomized design with three replications in Zabol city. Experimental treatments include different substrate (first factor, 17 types of substrate) which include non-combination and combined substrate of poplar wood chip, wheat bran, soybean meal, waste from industrial olive oil, cottonseed meal, sugarcane bagasse, waste Dates (trunks) of palm trees, waste from pruning saplings of ruby grape trees in Zabol city, wheat straw (remnants of wheat fields in Zabol city), pruned palm leaves. The second factor includes two types of chemical supplements: 1) magnesium sulfate (2 g / l for each two-kilogram bag based on the wet weight of the substrate) and 2) potassium nitrate (2 g / l for each bag). Kg, based on the wet weight of the substrate. The results showed that the effects of substrate on statistical values of carbon, nitrogen, carbon to nitrogen ratio, electrical conductivity, pH, cellulose, hemicellulose and lignin had a significant statistically significant effect before and after mushroom harvest at the 1% probability level. Also, the supplements effects on traits such as nitrogen, carbon-to-nitrogen ratio, and electrical conductivity of the substrate before span inoculation at a probability level of five percent were statistically significant. The highest total weight of 0.311 g was related to the substrate of wood chips + soybean meal and enriched with magnesium sulfate supplement. The highest levels of mushroom moisture (89.2%), ergosterol (477.1 mg) and antioxidant capacity (40.1%) were observed in the wood chip substrate + cottonseed meal and in the conditions of supplemental consumption of magnesium sulfate. The results also showed that increasing the ratio of carbon to nitrogen in the substrate reduced the weight of the fruiting bodies of the mushroom. Significant positive correlation was observed at the level of five percent probability between nitrogen, cellulose, hemicellulose, lignin and carbon substrate with polysaccharide values of the whole fruit organ.

Keywords: total polysaccharide, used compost, lignin, hemicellulose.