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**The Thesis Submitted for the Degree of M.Sc (in the field of
Horticulture Science)**

**Investigating of total polysaccharide and
yield of medicinal mushroom *Ganoderma
resinaceum* cultured on different agricultural
and industrial wastes**

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Abstract

One of the important factors that should be considered for the production of *Ganoderma resinaseum* is a suitable substrate. Because the substrate compounds, in addition to being available, should create lower financial costs for the producer. The use of wood chips is relatively expensive compared to the use of agricultural and industrial wastes. Forced waste and seemingly worthless agricultural and industrial wastes are produced and accumulated every year in most parts of Iran as a result of agricultural and horticultural activities. Thousand tons of these wastes are incinerated or disposed, causing environmental pollution and health hazards. One of the important strategies for using agricultural waste is to use the biological capacity of medicinal fungi. This research was conducted in a cultivation hall equipped with temperature, humidity and light control devices at Zabol University in 2020. This study was performed in a completely randomized design with 3 replications with Iranian isolate of *Ganoderma resinaseum*. Experimental treatments include 7 types of substrates including non-composite substrate of wood chip (sawdust), And combined substrates including wood chips with banana tree waste (70 to 30), Combining wood chips with palm waste (70 to 30), Combining wood chips with rice straw (60 to 40), Combining wood chips with wheat straw (60 to 40), Combining of wood chips and rice bran (90 to 10), Combining wood chips with soybean meal (90 to 10). The aim of this study was to investigate the different substrates (different wastes of agricultural and industrial products) for the cultivation of *Ganoderma resinaseum* and to investigate the relationship between the substrate and the amount of total polysaccharides of the fruit bodies and the performance of the Iranian isolate of this medicinal fungus. The results of this study showed that the highest yield (210.06 g / 2000 g substrate) and total dry matter (95.35 g / 2000 g substrate) of the fruiting body of *Ganoderma resinaseum* belongs to the combination of wood chips with rice bran (90 to 10). Also, the highest amount of total polysaccharide (15.95 mg / g dry matter) was related to the combined substrate of wood chips with rice bran. The results also showed that in the wood chips with rice bran substrate the shortest time in terms of spawn running time (28.66 days), the shortest time for pinhead formation time (41days) and the lowest time for precocity (65days) of *Ganoderma resinaseum* was recorded. According to the results of this study, it is recommended to add rice bran supplement, soybean meal and use of wheat straw, rice straw, date palm wastes and banana tree wastes to the wood chip (sawdust).

Keywords: Artificial substrates, Fruiting bodies, Spawn-run, Supplement