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

**Investigation of precocity, yield and some  
pharmacological properties of iranian strain  
of *Ganoderma applanatum* grown on different  
substrates**

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Abstract

Selecting a suitable substrate and also considering the replacement of other inexpensive agro-wastes instead of valuable wood chips is one of the most important points that should be considered in the cultivation and production of medicinal mushrooms. Selecting the appropriate substrate for fungi and enriching the substrate with organic supplements widely affects the production of fruiting bodies and the medicinal value of fungi. This research was carried out in a cultivation hall with an area of 6 × 7 meter and equipped with temperature, humidity and light control devices at Zabol University. This study was conducted as a two-way factorial based on a completely randomized design with three replicates. Experimental treatments include 10 types of wood chip base substrates (sawdust): Beech tree, Oak wood chips, Hornbeam wood chips, Poplar wood chips, Eucalyptus wood chips, Tamarisk wood chips, Vine sawdust (pruned stems), Date palm sawdust, Date palm leaf sawdust and Sugarcane bagasse. Also, 10% of nitrogenous organic supplements including wheat bran, rice bran, cotton meal and olive pomace were added to each of the main substrates. The purpose of this study was to investigate various agricultural and industrial wastes for preparation as a substrate for *Ganoderma applanatum* and also to evaluate some morphological, functional, nutritional and medicinal properties of this fungus. The results of this study showed the highest yield (145.5 gr), total dry matter (36.8 gr), fruit body protein (27.15 mg/100g D.M), ash (4.97 %), Nitrogen (4.38 mg/100g D.M) and Total polysaccharide (14.35 mg/g D.M) were related to the combined substrate of oak wood chips with wheat bran supplementation. The highest amount of fungal water (85.16%) was related to the substrate of eucalyptus wood chips and the highest biological efficiency (19.71%) was related to the combined substrate of oak wood chips with olive pomace. Potassium (299 mg / 100 g dry matter), calcium (11.73 mg / 100 g dry matter) and antioxidant capacity (54.25%) were recorded for oak wood chips substrate. The results also showed that in the oak wood chip substrate the shortest time in terms of spawn running time (29.40 days), the shortest time for pinhead formation time (43.13 days) and in the hornbeam wood chip substrate the lowest time registered for precocity (70/26 days). Although the wood chip substrate, especially oak was reported as a suitable substrate for growing *Ganoderma applanatum*, but easy access and lower cost of other agricultural and industrial lignocellulosic wastes have been introduced as a suitable alternative. According to the results of this study, the use of combined substrates and organic supplements in the cultivation and production of medicinal fungi, especially *Ganoderma applanatum*, is recommended.

Keywords: Dry matter, Indigenous mass, Precocity, Total polysaccharide