

Abstract

Trametes versicolor mushroom needs a suitable substrate to produce fruiting bodies, and optimal formulation of substrate will play a major role in success of production and quality of fruiting bodies. In this study, a three-factorial (substrate, supplement and isolate) experiment based on completely randomized design with 12 substrates, five supplements and two Iranian and American isolates of *Trametes versicolor* mushroom was carried out at 2018 in Zabol city. Substrates including poplar sawdust with wheat bran composition (80 to 20), poplar sawdust with rice bran composition (80 to 20), poplar sawdust, poplar sawdust with date palm waste composition (80 to 20), poplar sawdust with sugarcane bagasse composition (60 to 40), sugarcane bagasse, date palm wastes (trunk and leaves), sugarcane bagasse with date palm wastes composition (60 to 40), sugarcane bagasse with wheat bran composition (60 to 40), sugarcane bagasse with rice bran composition (70 to 30), date palm wastes with wheat bran composition (80 to 20), date palm wastes with rice bran composition (70 to 30). Also enrichment of the above substrates with urea chemical fertilizer at a ratio of 9g/L (for 1kg substrate), manganese sulfate (10µg/kg dry matter substrate), nano manganese oxide (10µg/kg dry matter substrate), Magnesium nitrate (80µg/g dry matter substrate) and nano magnesium oxide (80µg/g dry matter substrate) was done. Results showed that the highest (39.91g per 1000g substrate) total fresh weight of fruiting body (yield) of *Trametes versicolor* mushroom was dedicated to the Iranian isolate produced on the combination substrate of poplar sawdust with wheat bran (80 to 20) that with manganese sulfate supplementation. There was no also a statistically significant difference at 5% level with treatments (substrate, supplement and isolate) poplar sawdust with date palm wastes (80 to 20), manganese sulfate supplement and Iranian isolate and treatment bagasse sugarcane, nano magnesium oxide supplement, American isolate for the total fresh weight of fruiting body (yield) and all three (treatments) were in the same statistical class. So sugarcane bagasse and date palm wastes can also be used to produce the fruit body of the *Trametes versicolor* mushroom. Also, maximum and minimum time required to complete the vegetative growth stage of the *Trametes versicolor* mushroom (spawn running), respectively, were assigned to urea and magnesium nitrate supplements and the minimum time required to complete spawn running stage are related to the Iranian isolate grown on palm waste with rice bran (70 to 30).

Also, the total polysaccharide contents of the fruit body of Iranian isolate *Trametes versicolor* mushroom produced on poplar sawdust with rice bran composition (80 to 20) that enriched with manganese sulfate, 15.07 mg/g dry matter were recorded.

Key words: Fruiting body, Substrate, Vegetative and reproductive growth, Yield.



University of Zabol

Graduate School

University Campus

Department of Horticulture and landscaping

The Thesis Submitted for the Degree of Master of Science
(In the field of Horticultural science)

Title

Evaluation of the effects of enrichment substrate on some vegetative and reproductive characteristics of two iranian and american isolates of *Trametes versicolor* medicinal mushroom (*Coriolus versicolor*)

Supervisor

Dariush ramezan

Advisors

Alireza samzadeh kermani

Mahdi Pirnia

By

Behjat alizadeh jahan abadi

Summer 2019