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Effects of Different Cultivation Material Formulas on the Growth and Quality of Morchella spp

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ABSTRACT

To study the effects of different cultivation material formulas on the growth and quality of Morchella spp. With the cultivated species strains extracted from wild Morchella spp in Diebu County, Gannan Prefecture as experimental materials, an experiment was designed and the data then obtained was anyalyzed using the single factor variable method. By measuring the pileus length, pileus perimeter, stipe length, stipe perimeter and yield as well as the ash content, total sugar content, crude protein content and crude fiber content of wild Morchella spp, the effects of four different cultivation material formulas on the growth and quality of Morchella spp were studied. The result showed that the Morchella spp cultivated using Formula 1, i.e., the formula to which Morchella spp footing soil was added, grew best, and had the highest yield and the best quality; and the qualities of Morchella spps cultivated using other formulas decreased in a row. Formula 1 to which Morchella spp footing soil was added had the optimal effect on promoting the growth and quality of Morchella spp.

Keywords: Morchella spp; cultivation material; growth; quality

1. INTRODUCTION

Morchella spp, belonging to *Aseomycotina*, *Discomycetes*, *Pezizales*, *Morchellaceae* and *Morchella* (Guo et al., 2010), enjoys a reputation as "the world's most precious rare edible fungi" and is high nutritional. With a unique flavor and a variety of functions, it is rich in essential amino acids, vitamins, carbohydrates and proteins (Razali and Said, 2017; Halim and Phang, 2017). It is given this name because its pileus looks like lamb tripe (Che et al., 2010). With refreshing and kidney reinforcing functions, it also plays an important role in health care (Du et al., 2014). In addition, Morchella spp is a very good traditional Chinese medicine that is mild and sweet., and can be used to promote digestion, benefit intestinal tract and tonify spleen and stomach (Liu, 2013), having a great development and utilization value in the food, medicine, and cosmetics industries (Guan, 2012; Gao, et al., 2017). At present, there have been many studies of Morchella spp and most of them have focused on the fields of mycelium and sclerotium, health care, pharmacology, biological characteristics, and polysaccharide extraction (Wang, 2012; Zhang et al., 2002; Ren, 2010; Lei et al., 2013; Quan and Zhang, 2012; Liu et al., 2014; Xue et al., 2011). However, reports on the effects of cultivation material formulas on promoting the growth and quality of Morchella spp are rarely seen (Liu et al., 2013; Dai, 2013; Zhao et al., 2010; Zhao et al., 2009; Shamsudin et al., 2017). Therefore, a comprehensive study on the effect of different three-level strain cultivation material formulas on promoting the growth and quality of Morchella spp was conducted, which has provided a theoretical basis for further efforts to determine the optimum cultivation material formula for the growth of Morchella spp, and a scientific basis for