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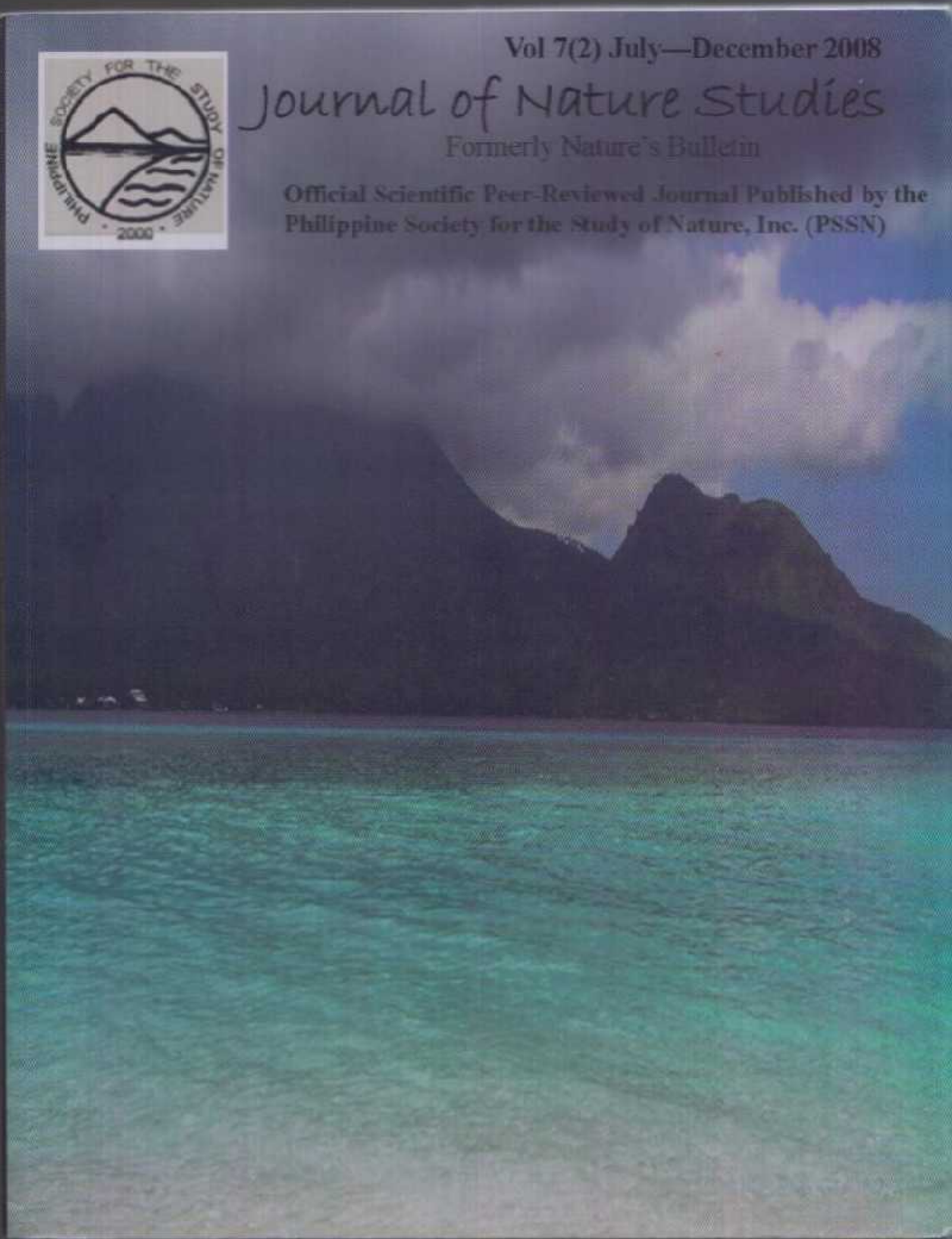

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IDENTIFICATION AND NUTRITION ELUCIDATION OF A WILD EDIBLE ECTOMYCHORRIZAL MUSHROOM

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ABSTRACT - In Indonesia, wild edible mushrooms collected in the forest during rainy season have broad acceptance and constitute a traditionally very important source of food. This is not suprising considering that approximately 25% fungi biodiversity in the world, including mushrooms, is found in Indonesia. This megabiodiversity condition is supported by the wet and sunny climates as well as the abundance of rain forests. However, most of those indigerous mushrooms are not adequately documented, characterized and studied. One of the local edible mushrooms commonly collected during the rainy season in Pangalengan West Java is labelled as X-1. In this experiment, we were able to characterize the identity of this particular mushroom using PCR amplification of ITS (Internal transcribed spacers) region using ITS1 and ITS4 primer pairs. Sequence analysis and phylogenetic tree construction indicated that X-1 resembles *Tricholoma* sp. We also analyzed and compared the proximate and mineral elements of this particular mushroom with oyster mushroom (*Pleurotus* sp.), shiitake mushroom (*Lentinus* sp.) and ear mushroom (*Auricularia* sp.). Our results indicated that the overall nutritive values of this mushroom was good compared to the commonly sold and consumed edible mushrooms such as oyster, shiitake and ear mushrooms.

Keywords : Edible mushroom, ITS, Proximate, mineral elements

INTRODUCTION

Macro fungi such as mushrooms, puffballs and morels as are important dietary components in many countries in the world such as Japan, China, etc. Mushrooms are mainsay in the Japanese diet and is highly regarded for its nutritional and healthful qualities. In indonesia, these mushrooms are usually served as alternative to meat. This is because people living in the villages are far away from the market and they are exposed to the natural vegetation (tropical rain forests) in which mushrooms grow.

During the rainy season, different species of edible and non edible mushrooms species usually grow on various natural substrates such as forest soil, decaying wood, termite nest, palm wastes, under the shade provided by tea, pine, bamboo and cinchona plantations. The collected edible species are usually sorted out and cooked or sold if present in a large quantity. Most of the colected mushrooms are *Coprinus* sp., *Flammulina* sp., *Pleurotus* sp. and *Termytomyces* sp. One of the commonly gathered mushroom is the one shown in Figure 1. This particular mushroom has been consumed for years due to its nice flavour. But this wild mushroom has not been identified and the nutritive values have also not been studied.

Edible mushrooms are favoured to consume because of their flavour. They are also characterized as containing high level of dietary fiber, substantial amount of protein, vitamins and minerals but are low in fat. They also have various health benefits such as antioxidative, anti tumour, and hypercolestromic effects (Wong & Cheung 2001). Therefore, edible mushroom are regarded as an ideal health food. It is then important to charaterize the nutritive value of wild edible mushrooms collected from the forest such as X-1 in order to ensure that the village people get an adequate nutrition. In this experiment, we invzstigate the chemical composition of X-1 isolate in order to evaluate its nutritional values. The results were used to compare with other commonly consumed edible mushroom such as *Lentinus* sp., *Pleurotus* sp.and *Auricularia* sp.

Conventionaly, basidiomycetes identification was done morphologically by the looking at the presence of balistoconidia, dikaryotic hyphae, clamp connection, teliospore and basidia (Gandjar *et al.*, 2006). However, identification of the X-1 mushroom was prevented by lack of samples and limited time for assay due to rapidly decaying fruit bodies collected by village people. Growing the mycellia to form fruit bodies was failed because the optimum media was unknown. In addition, diagnostic of sexual and asexual structure are time consuming and require experience. It's difficult to identify the particular mushroom conventionally. In this experiment, we made spore prints from the fruit body and grew the spores into mycelia for identification using rDNA sequences analysis.

DNA polymerase chain reaction (PCR) based-