

PHYTOCHEMICAL STUDIES OF AURICULARIA AURICULA (HOOK.)
UNDERWOOD IN CEBU CITY

A Thesis
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the Faculty of the Department of Biology
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In Partial Fulfillment
of the Requirements for the Degree
Master of Science in Biology

by
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**GRADUATE SCHOOL
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CEBU CITY**

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ABSTRACT

Phytochemical investigations were carried out on Auricularia auricula (Hook.) Underw. in Cebu City, from December, 1970 to April, 1971. Phytochemical qualitative tests have been performed to detect the presence of the following substances: carbohydrates (glucose, mannose, galactose, fructose, xylose, glucuronic acid, galactans, or pentosans); albumins and amino acids (tryptophan, arginine, tyrosine); and a small amount of lipids. The presence of fructose and galactose has been confirmed by the Seliwanoff's and the Mucic acid tests. The positive results of the Hopkins-Cole, Adamkiewicz, Liebermann's, Xanthoproteic, Millon's and Sakaguchi's tests, confirm the presence of the amino acids tryptophan, tyrosine, and arginine.

The fungus tissue was subjected to a mechanical grinding followed by alternate freezing and thawing process to ensure a thorough extraction of components. The aqueous extract was used for the phytochemical color tests. The grease spot test was used to detect the presence of lipids or fats.

According to the results of the proximate quantitative analysis using standard laboratory methods, Auricularia auricula (Hook.) Underw. has the following percentage composition on a dry weight basis: Moisture, 12.05 per cent; crude proteins (N x 6.25), 20.18 per cent; crude fat, 1.58 per cent; total ash, 4.64 per cent; and total carbohydrates (by difference), 61.54 per cent.

Because of its high protein content, the fungus is a desirable dietary component and could be a source of protein comparable to legumes or substitute for meat, an animal source of protein. The amino acid, tryptophan has been rated as an essential amino acid in the diet of man; while the tyrosine and arginine although not rated as essential amino acids, may exert a sparing action on a certain stage of growth and development in children.

The presence of amino acid tryptophan indicate a possibility of the presence of nicotinic acid which has been indicated in lowering serum cholesterol lipids or reduce the severity of atherosclerosis in animals. The possibility of the occurrence of indoleacetic acid (IAA) is also indicated by the presence of tryptophan. Microbiological assay to establish the presence of nicotinic acid (niacin, a Vitamin B complex) and of indoleacetic acid (IAA) in Auricularia auricula (Hook.) Underw. should be undertaken in the future.

The appreciable percentage of ash in A. auricula (Hook.) Underw. makes it a good source of mineral elements: iron, calcium, phosphorus, sodium, potassium, and chlorides in the diet. The presence of iron in the fungus makes it a valuable curative drug in anemia-related physiological disturbances.

As a whole the findings show the many possibilities for future investigation in A. auricula (Hook.) Underw. and its related species in the Philippines as a dietary supplement and as medicine.

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I. INTRODUCTION

The species Auricularia auricula (Hook.) Underw. belongs to the subclass Heterobasidiomycetadae of the class Basidiomycetes. It belongs to a group commonly referred to as the "ear-fungi".

For centuries many species of the ear-fungi have been used in the Orient as food for man. According to the account of Cooke in 1881, a considerable trade once flourished in the export of this curious "Jew's ear", Auricularia auricula (Hook.) Underw. This and two other species of Auricularia used to be collected in great quantities in Tahiti and shipped in a dried state to China for food. Some of these were reported to have found their way to Singapore. At present, ear-fungi are cultured in Taiwan and exported to various parts of the world.

Nowhere else are the ear-fungi as extensively used today for food and medicine as in China. In Chinese literature these fungi have been classified as among the most expensive delicacies on account of their nutritive value and taste (Wang, 1969; Liang, 1970). Quisumbing (1951) identified two edible species of Philippine Auricularia (A. affinis and A. auricula), but so far these have not been collected in commercial quantities. The fungi sold in local groceries are still largely imported from China and Japan.