DIVERSITAS HAYATI ISSN: xxxx-xxxx
Volume 01, Number 01, June 2023
Pages: 35-39

Characterization of Macroscopic Fungi on Leaf Litter in Harau Valley, West Sumatra

Atika Melwisra, Fitratul Aini*
Program Studi Biologi, Fakultas Sains dan Teknologi Universitas Jambi Jalan Raya Jambi-Ma.Buliah KM 15, Mendalo Indah, Jambi, Kode Pos 36361 email: atikamelwisra11@gmail.com, fitratulaini47@gmail.com

Manuscript received: 26 April 2023. Revision accepted: 31 May 2023

Abstract. Fungi are one of the many types of organisms that play an important role in maintaining the balance and nature of nature. As a tropical country with vast rainforests with a high diversity of macroscopic fungi, biodiversity is an important aspect that supports living systems on earth and maintains the sustainability and evolution of ecosystems. Fungal communities, especially saprophytic fungi, are often neglected in biodiversity inventories in the Harau Valley Area of West Sumatra.

Key words: Fungi, Leaf litter.

INTRODUCTION

Leaf litter is undecomposed organic material consisting of dead plant parts found on the soil surface (Samingan, 2009). Decomposition of litter is an important process in soil ecosystems, playing a major role in energy and nutrient transfer. Plant litter contains various organic materials, including cellulose, starch, and protein (Miranti et al., 2015). It is well known that the decomposition of plant litter on the soil surface is carried out by various types of microorganisms, including bacteria, actinomycetes, and fungi, particularly for plant-derived waste or litter (Samingan, 2009). As decomposers of plant residues, it is crucial to form and maintain plant communities defined as the shedding of vegetative and reproductive plant structures caused by aging (senescence), mechanical stress factors such as wind, or a combination of both, or by the overall death and damage

ISSN: xxxx-xxxx

of plants due to climatic factors (rain and wind).

Organic waste can naturally degrade through the action of bacteria or fungi, breaking down complex compounds into simpler elements. This process is called biodegradation of organic waste. The biodegradation of organic waste takes a considerable amount of time because it contains several difficult-to-degrade substances. Organic waste originating from plants, such as leaf litter, leftover vegetables, or agricultural residues, generally contains lignin, hemicellulose, and cellulose.

Microbes play a crucial role in the degradation of organic waste, accelerating the degradation process. Microbes accomplish this by secreting extracellular enzymes that can hydrolyze large complex molecules into smaller ones. The enzymatic system of microbes determines the decomposition process of plant biomass according to its constituent components, namely lignin, cellulose, and hemicellulose. Certain microbes, particularly from the group of fungi or molds, possess the ability to naturally degrade lignin through their lignolytic activities. There are three lignolytic enzymes found in molds: Lignin Peroxidase (LiP), Manganese Peroxidase (MnP), and Laccase. Some fungi are capable of synthesizing only two or one of these enzymes (Hikam et al., 2021).

Considering the importance of fungi in organic matter decomposition, research has been conducted on the diversity of lignolytic fungi from various substrates such as leaf litter in the Harau Valley area of West Sumatra. This study aims to identify the diversity of lignolytic fungi and their potential in the biodegradation of organic waste.

MATERIALS AND METHODS

Time and Place

The collection of macrofungi samples was conducted in the Lembah Harau area of Payakumbuh City in Limapuluh Kota Regency, West Sumatra Province, which was carried out from May 26th to May 29th, 2022. The identification was done at the Biotechnology and Engineering Laboratory, Faculty of Science and Technology, Universitas Jambi.

Equipment and Materials

The equipment used in this practical work includes: GPS, digital camera, scissors, ruler, jar bottles, writing tools, hygrometer, thermometer, pH meter, soil tester, sample boxes, film paper, knife, hanging labels, shovel, and identification books. The

DIVERSITAS HAYATI
Volume 01, Number 01, June 2023
Pages: 35-39
ISSN: xxxx-xxxx

materials used in this research are macrofungi samples.

Research Procedure

The samples were collected from leaf litter in the Lembah Harau area of West Sumatra. The samples were brought to the laboratory in sterilized plastic bags. The method used in this research is an exploratory method, as it is considered more effective for observing and collecting samples in wide forest areas with uneven distribution.

Sample Collection

Macrofungi samples found in the field were documented with a digital camera. Next, the morphology of the macrofungi was observed. The macrofungi samples were placed in sterile plastic and labeled.

Sample Preparation

Before the identification of macrofungi samples, sample preparation was conducted on-site by placing mushroom samples on oil paper and providing them with a name or label.

Sample Identification

Macrofungi identification was conducted macroscopically. Macroscopic identification was performed by observing the shape, color, and location of the cap and stem of the macrofungi.

RESULTS AND DISCUSSION

Three mushrooms have been successfully identified and described in this research. These mushrooms come from different families, namely Hypholoma fasciculare from the Strophariaceae family, Crepidotus herbarum from the Crepodotaceae family, and Gymnopus villosipes from the Omphalotaceae family.

1. *Hypholoma fasciculare*

Hypholoma fasciculare, has a cap (pileus) that almost covers the stem, with a whitish-yellowish color. It measures 2-5 cm and its habitat is in leaf litter. This mushroom is a common forest mushroom. It is a small saprotrophic gilled fungus that thrives in large clusters on decaying stumps, dead roots, or broad-leaved tree trunks.

DIVERSITAS HAYATI
Volume 01, Number 01, June 2023
Pages: 35-39
ISSN: xxxx-xxxx

Classification
Kingdom : Fungi
Division: Basidiomycota
Class : Agaricomycetes
Order : Agaricales
Family : Strophariaceae
Genus : Hyphloma
Species : Hyploma fasciculare

2. *Crepidotus herbarum* (Peck)

Crepidotus herbarum (Peck) has a white semicircular hood shape, wavy surface. The shape of the fruiting body is like a fan, the surface of the fruiting body is smooth, the shape of the lamella (porus) is branched, the shape of the attachment at the edge. This mushroom does not have a stalk (stipe) and does not have an annulus. The habitat of this fungus is in the litter. The diameter of this mushroom cap is about 0.6-1 cm.

Classification
Kingdom : Fungi
Division : Basidiomycota
Class : Basidiomycetes
Ordo : Agarical
Family : Crepodotaceae
Genus : Crepidotus
Species : Crepidotus herbarum (Peck)

3. *Gymnopus villosipes*

Gymnopus villosipes is a mushroom with a brownish-white cap (umbrella), its surface is slightly drier and rougher. It is 5 – 10 cm in size with a soft bladed underside and convex grooved edges. While still small, it looks like a button with a short stalk measuring ± 1 cm. The volva is not clearly attached to the ground while the stalk is attached centrally.

Classification
Kingdom : Fungi
Division : Basidiomycota
Class : Agaricomycetes
Family : Omphalotaceae
Genus : Gymnopus
Species : Gymnopus villosipes

DIVERSITAS HAYATI
Volume 01, Number 01, June 2023
Pages: 35-39
ISSN: xxxx-xxxx

CONCLUSION

As many as 3 mushrooms were identified and described. In this research. These mushrooms come from different families. namely Hypholoma fasciculare from the Strophariaceae family, Crepidotus herbarum from the Crepodotaceae family, and Gymnopus villosipes from the Omphalotaceae family. And these three species of fungi come from the same division, Basidiomycota.

ACKNOWLEDGEMENTS

Further research is needed regarding the diversity of fungal species in leaf litter in the Harau Valley region of West Sumatra.

REFERENCES

Hikam, A. R., Yulianti, D. M., & Ginanjar, R. R.(2021). Diversitas dan Potensi Jamur Lignolitik Asal Seresah Daun. Al-Hayat: Journal of Biology and Applied Biology, 4(1), 33-42.

Miranti, A. K., Rukmi, M. I., & Suprihadi, A.(2015). Diversitas Kapang Serasah Daun Talok (Muntingia calabura L.) Di Kawasan Desa Sukolilo Barat, Kecamatan Labang, Kabupaten Bangkalan, Madur. Bioma: Berkala Ilmiah Biologi, 16(2), 58-64.

Samingan, S. (2010). Jenis Fungi Yang Terdapat Pada Serasah Daun Acacia mangium. Jurnal Biologi Edukasi, 2(1), 19-23.