

IDENTIFICATION OF TRICHOPHYTON SP MUSHROOMS ON THE NAILS OF FISHMONGERS IN LIMBOTO TRADITIONAL MARKET GORONTALOREGENCY IN 2020

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ABSTRAK

Tinea unguium is the most difficult and long-cured dermatophytosis fungus. The nail becomes damaged with the shape of the nail that is no longer normal. Nail infection by fungus is accompanied by nail dystrophy. Subungual hyperkeratosis occurs and the separation of the nail plate from the nail tissue underneath. Diagnosis can be upheld by examination of fungal culture, this examination to determine the fungus that causes infection in the nail scab sample by doing a reading on the fungal culture macroscopic and microscopic.

The purpose of this study is to find out whether or not trichophyton mushrooms sp cause *Tinea Unguium* on the nails of fishmongers in the traditional market limboto Gorontalo regency. This type of research is descriptive with quantitative approach. Data collection using Purposive Sampling, with a total sample of 14 people.

From the results of the research that has been done, trichophyton sp mushrooms were found in samples of fishmonger's fingernails in Limboto Traditional Market gorontalo regency and only found rhizopus sp and *Aspergillus* sp mushrooms. Cultural results that show the presence of nondermatofita fungus group due to the contamination of fungi that live freely and contained dialam, fungi can contaminate in the form of spores contained in the air. Efforts to prevent fungal infection of the toenails are expected to always wash their hands using soap and cut the toenails and fingernails regularly, avoid barefoot in public spaces, such as public changing rooms or damp areas and a dirty environment.

Keywords: trichophyton sp, *tinea Unguium*, nail fish-monger

INTRODUCTION

Indonesia is one of the countries with a tropical climate with high humidity temperatures. This is one of the potential causes of spread and fungal infections. In addition, community behavior such as livelihoods as fish sales and living around the sale can also cause interaction with fungi. Fungi in general can quickly develop in damp places, can also move through water media, because it is known that water or moist conditions are an

excellent habitat for the growth and spread of fungal spores [8].

Tinea unguium or onychomycosis is an infection of the nail plate caused by dermatofita skin fungus, non-dermatofita, or yeast. Some studies mention that 80-90% of cases of *Tinea unguium* are caused by dermatofita fungi, specifically *Trichophyton rubrum* and *Trichophyton mentagrophytes*, the other 5-17% are caused by yeast especially *Candida* sp, and 3-5% are caused by non-dermatofita

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such as *Aspergillus* sp or *Scopulariopsis*. Symptoms that are often seen in this infection are damage to the nails, including the nails becoming thicker and appearing to be lifted from the base of the attachment or onycholysis, chapped, uneven and not shiny anymore, as well as discoloration of the nail plate to white, yellow, brown, to black[1].

In general, the cause of cases of *Tinea Unguium* is 80-90% dermatofita *Trichophyton rubrum* and *Trichophyton* agrophytes. Symptoms of fungal infection of the nails are referred to as onychomycosis caused by dermatofita fungus, yeast, or mold[1]. There are also studies that showed that the results of the study of 14 samples of keratan soles of the feet and between the toes of fish traders in the market Cikurubuk Tasikmalaya city there are 10 people infected with the fungus *Trichophyton rubrum*[7].

The prevalence of skin diseases throughout Indonesia increased from year to year, in 2012 was 8.46% then increased in 2013 by 9%[6]. This shows that skin diseases are still very dominant in Indonesia. Skin diseases in Indonesia are greatly increased due to Indonesia itself which has a tropical climate, so the spread is also very increased sharply. Based on data from the Gorontalo District Health Office, fungal infections in the toenails caused *Tinea unguium* in 2017 the number of infections of 11 people, and in 2018 experienced an increase in fungal infections causing *Tinea unguium* by 83 people [3]. Based on the data, a person who works in a damp, dirty or poorly maintained place of personal hygiene and the surrounding environment has the potential in the occurrence of fungal infections resulting in abnormalities due to the infection.

One of the markets in Gorontalo is Limboto afternoon market. In limboto afternoon market there are at least 200

fish traders occupying several stalls. Based on observations made selling places in each fish table and in the surrounding environment is dirty and not maintained cleanliness. This can certainly adversely affect fishmongers especially for fishmongers who do not use footwear.

Factors that show a statistically significant relationship with the occurrence of *Tinea unguium* is the use of personal protective equipment such as boots and gloves when conducting trading activities in the market. Some of the sellers apparently never use it, because the distance of residence with the place of sale is not so far, even some of them are located right next to the house, so they ignore the safety of their feet and hands against various health problems during their activities. Sanitation and the environment must still be considered in every community activity to reduce health problems that may exist around the community.

Therefore, researchers are interested in conducting research on identification of nail fungus in fishmongers in Limboto Traditional Market gorontalo regency which is expected to be information about fungal infections in the toenails of fishmongers selling in limboto traditional market in Gorontalo regency.

RESEARCH METHODS

The type of research used is descriptive with quantitative approach. The sampling location is In Limboto Traditional Market Gorontalo Regency. The number of samples as many as 14 samples of nail scabs in fishmongers taken by Purposive Sampling method. *Trichophyton* mushroom identification data obtained through testing in microbiology laboratory of Bina Mandiri University Gorontalo by conducting examinations such as physical examination, examination of fungal

culture conducted in two stages macroscopic and microscopic.

At the stage of Macroscopic Examination its growth is observed daily observations made among others: soft texture as well as flat colony surface, at the top of the colony is creamy white with the rest is yellow-brown to burgundy at the bottom, finely shaped like cotton wool. And at the stage of microscopic examination using the technique directly that is the glass object dripped eosin solution, then the colony of fungi is taken to taste using sterile ose, then placed on the glass object and made like an apusan, then covered using a glass cover. Preparations were observed under a magnification microscope of 10 × or 40 × and a description of microscopic characteristics was carried out and identification was carried out.

Positive category when in mushroom culture found fungus causes tinea unguium with identification of fungus dermatofita group as follows: 1) Microsporum, colony of fine powder microsporum, such as wool or powder. On microsporum canis colonies with hairy edges, orange yellow, middle white, orange back, and growing period of 1 week. 2) Epidermophyton, the features of the fungus Epidermophyton colony is slow-growing with a flat fringe with a greenish-brown color and a velvety shape. 3) Trichophyton, trichophyton mushroom colony causes purpleium tinea divided into two namely: a. Trichophyton rubrum : This fungus is yellow-brown or red wine. the colony is flat, creamy white in color. b. Trichophyton mentagrophytes: anthropophilic fungus whose colony is flat and yellowish-white with a surface like a cotton pile. This fungus is yellowish and pigment pink or brown.

Negative category, if the examination is not found trichophyton fungus sp cause tinea unguium.

Data analysis is done univariately. Univariate analysis is a simultaneous data analysis in which the observed data has only one dependent variable (non-free variable) on each object observed with the results obtained from laboratory tests processed in a manual way and presented in the form of tables and images accompanied by explanations in the form of narratives.

RESEARCH RESULTS

After microbiology test of nail scabs conducted in microbiology laboratory of Bina Mandiri University Gorontalo obtained the following results:

Table 1. Characteristics of research subjects

Based on the results of the study for the characteristics of respondents seen from their gender can be seen Table 1.

Gender	n (Sample)	%
Female	1	7,14
Male	13	92,86
Total	14	100

(Source: Primary Data, 2020)

Based on Table 1 can be found from the number of samples as many as 14 people with female respondents there is 1 person with a percentage of 7.14% and 14 men with a percentage of 92.86% who are willing to be sampled in the study by signing a sheet *informend consent*.

Table 2. Characteristics of nail fungus

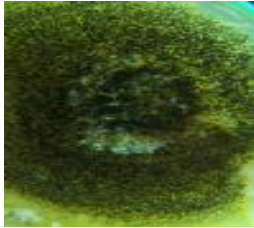
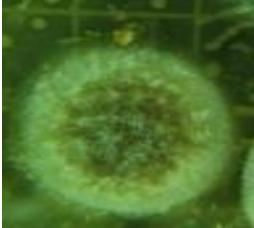
Based on the results of the study obtained mushrooms that were successfully isolated from the nails of fishmongers observed macroscopic and microscopic.

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No	Kode Sampel	Jamur yang di temukan		
		<i>Trichophyton sp</i>	<i>Rhizopus sp</i>	<i>Aspergillus sp</i>
1	Sampel 1	-	√	
2	Sampel 2	-	√	
3	Sampel 3	-		√
4	Sampel 4	-	√	
5	Sampel 5	-	√	
6	Sampel 6	-	√	
7	Sampel 7	-	√	
8	Sampel 8	-		√
9	Sampel 9	-	√	
10	Sampel 10	-		√
11	Sampel 11	-	√	
12	Sampel 12	-	√	
13	Sampel 13	-		√
14	Sampel 14	-		√
Total		-	9 Sampel	5 Sampel

Based on Table 2. can be known results from the examination of 14 samples of mushroom culture did not find the presence of fungus Trichophyton sp but found other fungi are 9 positive samples of rhizopus sp mushroom and 5 positive samples of mushroom *Aspergillus sp.*

Table 3. Characteristics of Nail Mushrooms in FishMongers in Limboto Traditional Market Gorontalo Regency

No	Characteristics of the colony	Mushroom Morphological Characteristics	Pictures	Classification
1	-Dark black colony color -Color behind blackish brown with yellow side -Nature of colony like cotton	-Hyphae do not have stolons and rhizoids that are dark in color -Have sporangiofora that grows on stains and is formed also rhizoid -Sporangia large and black.		Kingdom : Fungi Division : Zygomycota Class : Mucoromycotina Order : Mucorales Famili : Mucoraceae Genus : Rhizopus Species : Rhizopus sp, (Waluyo Lud, 2018)
2	-Blackish brown colony color -The color behind the colony is black brown with yellow sides -Colony properties such as velvet	-Has fibrous hyphae -Has branched mycelium -Group colonies -Has konidiofora septate or nonseptat		Kingdom : Fungi Division : Amastigomycota Class : Eurotiomycetes Order : Moniliales Famili : Moniliaceace Genus : Aspergillus Species : Aspergillus sp, (Waluyo Lud, 2018)

(Source: Primary Data, 2020)

Based on the identification of nondermatofita type mushrooms that cause purpleium tinea found in the fishmonger's toenail culture, rhizopus sp and Aspergillus sp mushrooms.

DISCUSSION

Fungi or fungi (fungus) are heterotrophic organisms that require organic compounds for their nutrition. If the fungus that lives from inanimate

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organic objects is dissolved, it is called saprophyte. Saprophytes destroy the remains of complex plants and animals, deciphering them into simpler chemicals, which are returned to the soil and increase their fertility, so it is very beneficial for humans. On the contrary it can also be detrimental if the fungus decomposes wood, textiles, food, and other materials. In humans and animals as "primary pathogens" and "opportunistic pathogens", it can also cause an increase in fungi infections is a change in the immune system[4].

The research conducted by researchers is to identify dermatofita fungus that is trichophyton sp fungus that causes purpleium tinea on the nails of fishmongers in Limboto Traditional Market Gorontalo Regency. In this study, samples were taken from 14 fishmongers in the category of women and men to isolate the fungus dermatofita namely Trichophyton sp found on the toenails of fishmongers. Fishmongers are known to be a profession that requires a person both female and male to work in a wet or humid place so that it is possible to have a fungal infection that colonizes the damaged nails and causes discoloration, structure and shape and results in various complications of the nails. Furthermore, the fungus that causes abnormalities in the nails is the dermatofita fungus group with symptoms such as uneven nail surface, nails become brittle or hard, yellowish brown color and nails finally appear porous and one of them is like tinea unguium whose healing takes several months and can even reach a year [6].

Dermatofita is a group of fungi that like to digest tissues containing horn substances (keratin) such as stratum corneum in the epidermis (ari skin), hair and nails. Diseases caused by dermatofita fungus are referred to as dermatophytosis (tinea, ringworm, ringworm, tiegne, or

Herpes cirrhosis). Dermatofita is divided into three genera, including Trichophyton, Mycosporum, and Epidermofiton[4]. Dermatofita causes dermatophytosis in each infected person, but the infection has different clinical symptoms based on place or part of the limb.

Based on the results of the research that has been done, trichophyton sp mushrooms were found in samples of fishmonger's fingernails in Limboto Traditional Market gorontalo regency and only found rhizopus sp and Aspergillus sp mushrooms. Both fungi are usually present only in food and often cause damage to food, but Aspergillus sp and Rhizopus sp are also non-dermatofita onychomycosis agents that cause nail infections. This is in line with the results of the monthly report data of Tinea Unguium disease in the Gorontalo District Health Office states that people who are affected by dermatofita fungus in 2017 obtained tinea infections as many as 11 people, in 2018 there was an increase in the number of tinea infections by 83 people and in 2019 and 2020 tinea infections have not been obtained in Gorontalo Regency [3]

Aspergillus sp and Rhizopus sp are non-dermatofita onychomycosis agents that cause nail infections. The diagnostic characteristics of onychomycosis by Aspergillus sp and Rhizopus sp can be observed through positive direct observation, positive fungal culture or molecular detection[2].

Cultural results that show the presence of nondermatofita fungus group due to the contamination of fungi that live freely and are everywhere. Fungi can contaminate in the form of spores that are present in the air. Generally, poor environmental conditions such as humidity make it easier for fungi to grow in cultural media[8]

The presence of risk factors for fungal infections can be caused by the

lack of complete use of PPE. In addition, the use of boots or not and too often and the lack of cleanliness in boots also causes high likelihood of fungal growth that triggers the occurrence of purple tinea. The lack of maintaining the cleanliness of the washing nails without using soap and not drying them well so that the fungus can grow on the toenails. In an effort to prevent infection, it is expected to always use tools in the form of hand slops and boots. Traders after doing trade transactions then wash their hands using soap and cut the toenails and fingernails regularly, avoiding barefoot in public spaces, such as public dressing rooms or damp areas and a dirty environment.

CONCLUSION

Based on the results of the research that has been done, trichophyton sp mushrooms were found in samples of fishmonger's fingernails in Limboto Traditional Market gorontalo regency and only found rhizopus sp and Aspergillus sp mushrooms.

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