IDENTIFICATION OF FUNGI CAUSES TINEA UNGIUM IN NAIL OF ENVIRONMENTAL DEPARTMENT OF WORKERS (DLH) GORONTALO CITY

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ABSTRACT

This research aims to identify the fungus that causes Tinea Ungium on the toenails of the Gorontalo City Environment Agency (DLH) worker

The method used in this study is a research approach qualitative descriptive observational. The type of data used is primary data in the form of research results and secondary data in the form of data from literature, books and documents as well as data from the Health Service and Environment Service of Gorontalo City. The sampling technique in this study used a purposive sampling technique, with a total of 10 samples.

The results showed that the percentage of Tinea ungium infection on the toenails of DLH officers in Gorontalo City was 0% or no fungal species that caused Tinea ungium disease were found by producing varying colony colors oncolony culture methods, namely, brownish gray, white, brownish yellow, greenish yellow. Meanwhile, with the microscopic method, the results of the fungal species that cause Tinea unguium were obtained, including the following fungi: Rhizopus sp, Mucor sp, Aspergillus sp, and. With this research, it is hoped that waste officers can take early precautions against the fungus that causes tinea ungium.

Keywords: *Tinea unguium*, Toe nails.

INTRODUCTION

Indonesia with a tropical climate and high humidity and has a more appropriate support for the life of microorganisms that provide advantages and disadvantages. A microorganism that causes harm is a fungus. Mushrooms can live anywhere, whether in the air, soil, water, clothing, to the parts of the human body. This is because mushrooms can live well in humid conditions. fungi that live on these parts of the human body can produce skin disorders such as Tinea Ungium [9].

Skin infections caused by fungi are quite common in Indonesia. Basically the fungal group is divided into superficial infections, cutaneous infections with subcutaneous infections. Dermatomycosis fungal diseases include disorders of the skin, nails, hair, and mucosa [8].

Severe fungal infections can cause discoloration of the nail plate from white, yellow, brown, to black. The infection can affect various nails but not the entire nail is infected. When infected with a fungus in the nail is still mild so it does not require healing.

However, sometimes a nail fungal infection can cause pain with thickening of the nail. where the nail becomes very thick and looks raised at the base of its attachment or onycholysis [11].

The prevalence of Tinea unguium in Southeast Asia is known to be lower than in western countries, the percentage of Tinea unguiume cases in tropical countries ranges from 3.8% but in subtropical countries or countries with more extreme climates it is 18%. Data on the value of Tinea Ungiume cases in Indonesia is still lacking, especially in groups that have more risky jobs, such as pig farmers. Meanwhile in Gorontalo City there are data from the Gorontalo City Health Office in 2020 obtained by researchers, tinea ungium infections as many as 25 cases [4].

tinea ungium may not result in mortality, but produce clinically significant abnormalities in a natural way, reduce aesthetics, are chronic, and difficult to treat, certain things can further hinder comfort and decrease the quality of life of patients. Fungal infections can add to bacterial infections, cellulite, chronic urticaria, also for fungal reservoirs that then infect other parts of the body can also be transmitted or infected to other individuals [1].

Infections in the nails can attack individuals when working or making direct contact in humid and dirty environments such as farmers, scavengers, and cleaners. Disorders of the skin are always found in the toes, especially on the third to fourth and fourth and fifth toes, the sole of the foot and the lateral part of the foot. [3].

The Cleaning Officer at the Environmental Service (DLH) is one or several people who have the task of protecting cleanliness by producing cleaning services at one of the locations, offices, or agencies under the auspices of the DLH, in this case the cleaning officer has the task of maintaining cleanliness and producing cleaning services in all city/district areas. [2].

Although there is no data on accidents or disturbances due to work for janitors, the impact of health disorders is due to exposure to various types of waste or work accidents, such as injuries that are buried by the presence of garbage, are more likely to be experienced. Based on OHSAS 18801, a work accident is a condition related to work carried out by workers that can cause injury or illness (depending on the severity), and the presence of which can result in death. Based on The International Labor Organizations (ILO) and international labor organizations, the impact of the formation of work accidents can be divided into two groups, namely unsafe conditions and unsafe behavior/movements.[2]

According to Susanto & Ari (2013), the skin can be exposed to microorganisms, bacteria, viruses or fungi. Tinea pedis includes both dermatophyte and fungal infections that are very common in humans, occurring in 70% of adults. The most common result is trichophytone rubrume. All incidences are related to work, so they are always called dermatophytosis because of work, including Tinea pedis with Tinea ungiume (Kumar et al., 2011). Tinea pedis with Tinea ungiume always attacks adults aged 20-50 years who work in wet locations such as car washers and motorbikes, farmers, garbage collection and people who always wear closed shoes every day [2].

The prevalence of dermatophytosis disorders in Asia is up

to 35.6%. National Skine Cares Singapore in 1999-2003, the percentage of Tinea pedis reached 27.3%. At Chumitshue Chuoe Hospitale Tokyo Japan, the percentage of Tinea pedis is up to 64.2%. Indonesia itself in 2000-2004 the prevalence increased by 14.4%[10].
The results of the 2018 Indonesian Health overview show where the distribution of outpatients in the medical diagnosis of "Skin Diseases with Subcutaneous Tissue" in hospitals throughout Indonesia is increasing year by year. It is proven that in a number of patients in 2018 there were 64,557 patients who occupied level 12 in 21 disorders [7].

Research conducted by Anugrah Ramadhany in 2018 on janitors found that out of 98 people, 6 people showed that there was tinea manuse in the group who wore gloves, and 1 person in the group who did not wear gloves. However, 5 people who have not been exposed to tinea manuse have been exposed to the group wearing gloves, and 86 people have not been exposed to gloves.

Another study on the presence of fungi in janitors by Erika Safitri in 2020 which examined the description of dermatophyte fungi in janitors in Indonesia during 2012-2019 showed that of the 10 literatures obtained, all of them revealed that there were respondents who were exposed to dermatophyte fungi.

The job as a janitor at DLH Gorontalo City is not an easy job, even this job has a very big risk to health because can have a negative impact on their health, especially through the area of the feet and hands that are always in direct contact with the garbage found in the area or location being cleaned where the janitor has the potential to be exposed to fungal or bacterial infections in environmental sanitation in the area / location which he cleaned.

According to a preliminary survey conducted by researchers, until early 2021, DLH Gorontalo City has 295 cleaning staff. The number consists of 44 garbage car drivers, 105 transporters, 113 sweepers, 16 sewer officers, 8 trimmers and 9 supervisors.[5].

In accordance with this problem, observers want to carry out observations by identifying the fungus present in the toenails (Tinea unguium) of janitors at the City DLH.

In accordance with this background, so that not all the problems raised by the researcher are to be solved. However, the researchers focused the problem on the fungus that causes Tinea Ungium infection. The sub-focus of the examination is to find out what type of fungus can cause infection in the toenails (Tinea Ungium) for the Environmental Service (DLH) workers in Gorontalo City by identifying them.

The purpose of this observation is to identify the fungus on the toenails of workers at the Gorontalo City Environmental Service (DLH).This observational data can be used as a library and comparison material for further researchers regarding Tinea Ungium Description on the toenails of Gorontalo City Environmental Service (DLH) workers.

RESEARCH METHODS

Research Approach The observations used a qualitative approach with a descriptive character. Qualitative research to describe the presence of Tinea ungium infeksi infectionThe type of research used in this observation is descriptive observational observation, namely in carrying out observations and testing samples in the form of scraping the

toenails of workers at the Gorontalo City Environment Service (DLH) with the aim of determining the presence of Tinea unguium infection of the toenail of the worker.

There is an implementation time. Activities are carried out in July until they are finished.

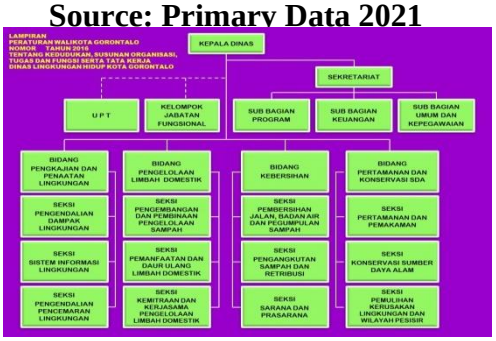
Research The location of the research sample is planned in Gorontalo City Environment Agency (DLH).

The place for examination of research samples is planned at the Microbiology Laboratory of the Health Analyst Diploma III Program at Bina Mandiri University, Gorontalo.

RESEARCH RESULT

The Gorontalo City Environmental Service (DLH) is one of the elements of the implementation of the Gorontalo City Government in the Environmental sector which is led by a Head of Service. This work unit is located at Jl. Rajawali Ex. South Heledulaa Kec. East City of Gorontalo City, as for the organizational structure of the Environmental Service (DLH) in Gorontalo City are:

Figure 1: DLH Profil Profile
Image : DLH Profil Profile
Source: Primary Data 2021



In carrying out its duties, DLH Gorontalo City has several fleet data consisting of:

Fleet of dam trucks 17 units, Fleet arm rollers 2 units, motorbike carts 20 units. Garbage carts 15 units. Total rayon 5 locations.

The number of officers owned by the Gorontalo City DLH are as follows: 44 car drivers, transporters 105 people, Sweeper 113 people, Ditch 16 people, Trimmer 8 people, Supervisor 9 people.

The research was conducted at the Microbiology Laboratory, Bina Mandiri University, Gorontalo, with the research subject toenails and toenail scrapings of janitors

A. Mushroom Insulation 1

Fungal isolate I was obtained from patient code 1A. The pure isolates obtained were identified and observed by means of macroscopic and microscopic means, through macroscopic control in fungal isolates 1 obtained the criteria in Table 4.1.

Table 1: Observation Results of Fungal Isolates 1

No	Observed Features	Observation result
1.	Colony color	brownish gray
2.	Base color in medium	brownish gray
3.	Reverse Nature	brownish gray
4.	Colonial Nature	Fine Powder

(Source: Primary Data, 2021)

What is very clear is the microscopic examination of macroscopic in isolate media can be seen in Figure 4.1

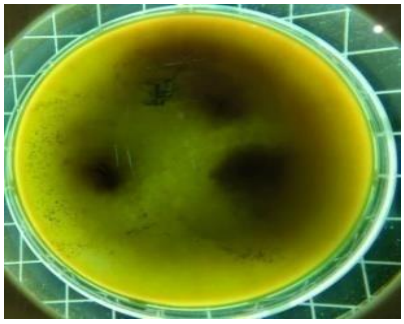


Figure 2: Top View
Source: Primary Data 2021

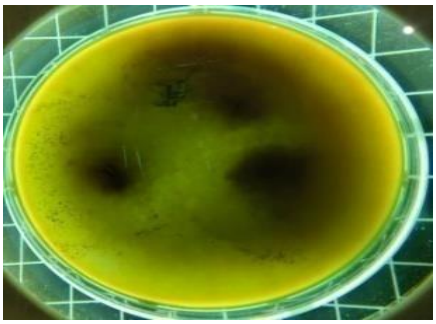


Figure 3: Bottom View
Source: Primary Data 2021

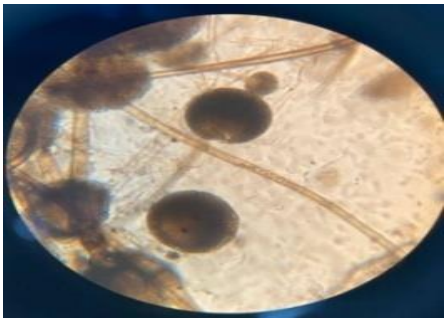


Figure 4: Microscopic 400x
Source: Primary Data 2021

In accordance with the microscopic testing carried out on fungal isolate 1, the criteria in table 4.2 . were obtained

Table 2 Microscopic Testing of Fungal Isolates 1

No	Observed characteristics	Observation result
1.	hyphae:	
	a. Slept / no	No Parting
2.	Sporangia:	
	a. Is there any or not	There is
	b. Shaped	Round
3.	Sporangiophores:	
	a. Is there any or not	There is
	b. Shaped	Upright
	c. Color	Dark brown
4.	Rhizoid :	
	a. Shape	branch
	b. Color	Chocolate

(Source: Primary Data, 2021)

From the characteristics of certain macroscopic and microscopic examinations so that code 1 fungal isolates can be classified, including:
Kingdom : Myceteae
Division: Zygomycota
Class: Zygomycotes
Order: Mucorales
Family : Mucoraceae
Genus: Ryzopus
Species : Rhizopus sp

B. Mushroom Insulation 2

Fungal isolate 2 was obtained from patient code 2A. The pure isolates obtained were identified and observed by macroscopic and microscopic methods. Through macroscopic testing of fungal isolate 2, the criteria in Table 4.3 were obtained.

Table 3 Macroscopic Observation Results of Fungal Isolates 2

No	Observed Features	Observation result
1.	Colony color	brownish gray
2.	Base color on medium	brownish gray
3.	Reverse Nature	brownish gray
4.	Colonial Nature	Fine Powder

(Source: Primary Data, 2021)

What is very clear is that microscopic and macroscopic testing in isolate media can be reviewed.

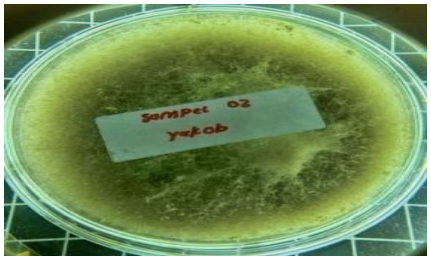


Figure 5: Top View
Source: Primary Data 2021

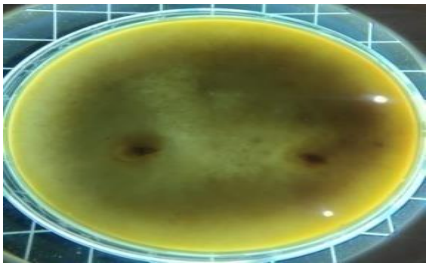


Figure 6: Bottom View
Source: Primary Data 2021

Figure 7 : Microscopic 400x
Source: Primary Data 2021

In accordance with the microscopic testing carried out on fungal isolate 2, criteria were obtained.

Table 4 Microscopic Testing of Fungal Isolates 2

No	Observed characteristics	Observation result
1.	hyphae:	
	a. Slept/ no	No Parting
2.	Sporangia:	
	a. Is there any or not	There is
	b. Shaped	Round
3.	Sporangiophores:	
	a. Is there any or not	There is
	b. Shaped	Upright
	c. Color	Dark brown
4.	Stolon :	
	a. Color	Chocolate
	b. Shape	Fine
5.	Rhizoid :	
	c. Shape	branch
	d. Color	Chocolate

(Source: Primary Data, 2021)

From the characteristics of certain macroscopic and microscopic examinations, fungal isolates code 1 can be classified into:
Kingdom : Myceteae
Division: Zygomycota
Class: Zygomycotes
Order: Mucorales
Family : Mucoraceae
Genus: Ryzopus
Species : Rhizopus sp

C. Mushroom Insulation 3

Fungal isolates 3 were obtained from patient code 3 A. The pure isolates obtained were identified and observed by macroscopic and microscopic methods. Through macroscopic testing of fungal isolates 3, the criteria in Table 4.3 were obtained.

Table 5 Macroscopic Test Results of Fungal Isolate 3

No	Observed Features	Observation result
1.	Colony color	White
2.	Base color in medium	White
3.	Reverse Nature	White

4.	Colonial Nature	Fine Powder

(Source: Primary Data, 2021)

What is very clear is that microscopic and macroscopic testing in isolate media can be reviewed.

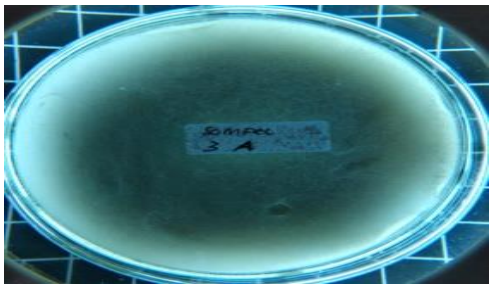


Figure 7 : Top View
Source: Primary Data 2021

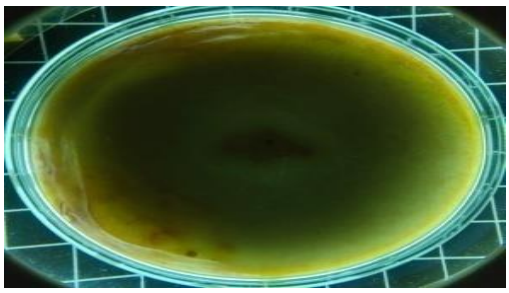


Figure 8 : Bottom View
Source: Primary Data 2021

In accordance with the microscopic testing carried out on fungal isolate 3, the criteria in table 4.3 were obtained

Table 6 Microscopic Testing of Fungal Isolates 3

No	Observed characteristics	Observation result
1.	hyphae:	
	a. Slept/ no	No Parting
2.	Sporangiophores:	
	a. Is there any or not	There is branch
	b. Shaped	
3.	Columella:	
	a. Is there any or not	There is Round
	b. Shaped	White
	c. Color	
4.	Stolon :	
	a. Color	White
	b. Shape	Fine

(Source: Primary Data, 2021)

From the characteristics of certain macroscopic and microscopic examinations so that code 3 fungal isolates can be classified into:
Kingdom : Myceteae
Division: Zygomycota
Class: Zygomycotes
Order: Mucorales
Family : Mucoraceae
Genus: Mucor
Species : Mucor sp

D. Mushroom Insulation 4

Fungal isolate 4 was obtained from patient code 4A. The pure isolates obtained were identified and observed by macroscopic and microscopic methods. Through macroscopic testing of fungal isolates 4, the criteria in Table 4.7 were obtained.

Table 7 Results of Macroscopic Testing of Fungal Isolate 4

No	Observed Features	Observation result
1.	Colony color	Yellow Brown
2.	Base color in medium	Brownish Yellow
3.	Reverse Nature	Brownish yellow
4.	Colonial Nature	Coarse Powder

(Source: Primary Data, 2021)

What is very clear is that microscopic and macroscopic testing in isolate media can be reviewed.

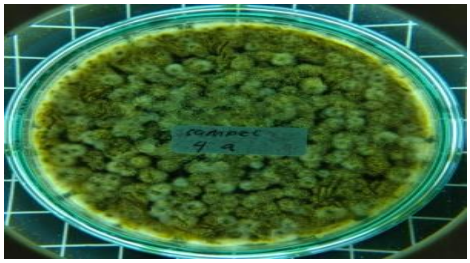


Figure 9 : Top View
Source: Primary Data 2021

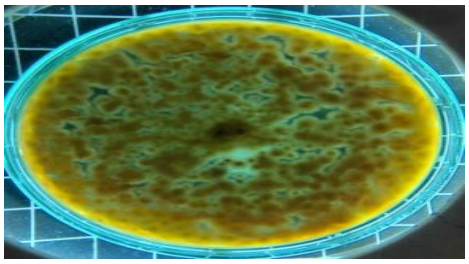


Figure 10 : Bottom View
Source: Primary Data 2021

In accordance with the microscopic testing carried out on fungal isolates 4, the criteria in table 4.8 . were obtained

Table 4.8 Microscopic Testing of Fungal Isolates 4

In accordance with the microscopic testing carried out on fungal isolates 4, criteria were obtained.

Table 8 Microscopic Testing of Fungal Isolate 4

No	Observed characteristics	Observation result
1.	hyphae:	
	a. Slept/ no	parting
2.	Conidiophores :	
	a. Color	Yellow
	b. Branched/not	Round
	c. Smooth Wall/ No	Fine
3.	Vesicles:	
	a. formation	Round
	b. Is there any or not	There is Yellow
	c. Color	
4.	Fialide:	
	a. It grows on	There is Yellow
	b. Color	Round
	c. formation	
5.	Conidia:	
	a. Color	Yellow
	b. formation	Round Rough
	c. Wall	

(Source: Primary Data, 2021)

From the characteristics of the macroscopic and microscopic examination, the fungal isolate code 4 can be classified into:
Kingdom : Fungi
Phylum: Ascomycotae
Class : Eurotiomycetese
Order: Eurotialese
Family : Trichocomaceae
Genus: Aspergillus
Species : Aspergilus sp

E. Mold Isolation 5

Fungal isolate 5 was obtained from patient code 5. The pure isolate obtained was identified and observed by macroscopic and microscopic methods. Through macroscopic testing of fungal isolates 5, the criteria in Table 4.9 were obtained.

Table 9 Results of Macroscopic Testing of Fungal Isolate 5

No	Observed Features	Observation result

1.	Colony color	brownish gray
2.	Base color in medium	brownish gray
3.	Reverse Nature	brownish gray
4.	Colonial Nature	Fine Powder

(Source: Primary Data, 2021)

What is very clear is that macroscopic and microscopic testing in isolate media can be reviewed

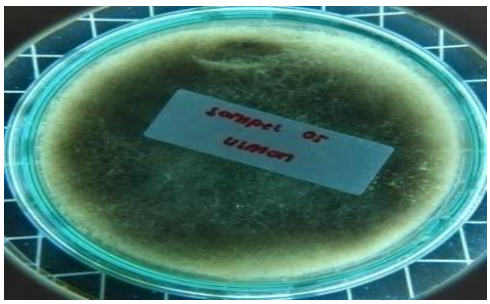


Figure 11 : Top View
Source: Primary Data 2021

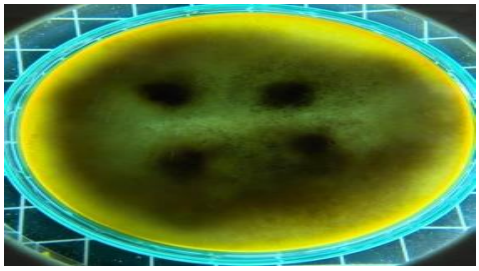


Figure 12 : Bottom View
Source: Primary Data 2021

In accordance with the microscopic testing carried out on fungal isolates 5, the criteria for

Table 10 Microscopic Fungus Isolate 5

No	Observed characteristics	Observation result
1.	hyphae:	
	a. Slept/ no	No Parting
2.	Sporangia:	
	a. Is there any or not	There is
	b. Shaped	Round
3.	Sporangiophores:	
	a. Is there any or not	There is
	b. Shaped	Upright
	c. Color	Dark brown
4.	Rhizoid :	
	a. Shape	branch
	b. Color	Chocolate

(Source: Primary Data, 2021)

From the characteristics of certain macroscopic and microscopic examinations to the fungal isolate code 1, it can be classified into:
Kingdom : Myceteae
Division: Zygomycota
Class: Zygomycotes
Order: Mucorales
Family : Mucoraceae
Genus: Ryzopus
Species : Ryzopus sp

F. Mold Insulation 6

Fungal isolate 6 was obtained from patient code 6A. The pure isolates obtained were identified and observed by macroscopic and microscopic methods. Through macroscopic testing of fungal isolates 6, the criteria in Table 4.11 were obtained

Table 11 Macroscopic Test Results of Fungal Isolate 6

No	Observed Features	Observation result
1.	Colony color	Brownish Yellow
2.	Base color in medium	Brownish Yellow
3.	Reverse Nature	Brownish Yellow
4.	Colonial Nature	Coarse Powder

(Source: Primary Data, 2021)

What is very clear is that microscopic and macroscopic testing in isolate media can be reviewed.

(a) mushroom isolate 6 Top view

Figure 13 : Top View
Source: Primary Data 2021

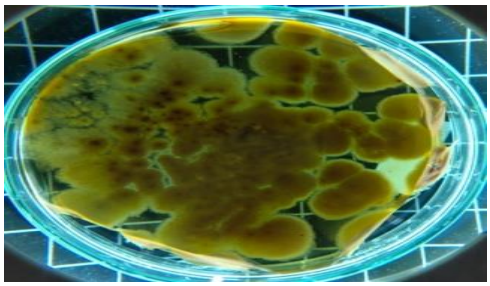


Figure 14 : Top View
Source: Primary Data 2021

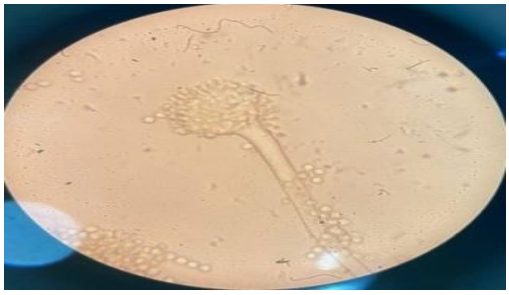


Figure 15 : Bottom View
Source: Primary Data 2021 In accordance with the microscopic testing carried out on fungal isolates 6, the criteria in table 4.12 . were obtained

Table 12 Microscopic Testing of Fungal Isolate 6

No	Observed characteristics	Observation result
1.	hyphae:	
	a. Slept/ no	parting
2.	Conidiophores :	
	a. Color	Yellow
	b. Branched/not	Round
	c. Wall/ No	Fine
		Smooth
3.	Vesicles:	
	a. Shape	Round
	b. Is there any or not	There is Yellow
	c. Color	
4.	Fialide:	
	a. It grows on	There is Yellow
	b. Color	Round
	c. Shape	
5.	Conidia:	
	a. Color	Yellow
		Round
	b. Shape	Rough
	c. Wall	

(Source: Primary Data, 2021)

From the characteristics of the macroscopic and microscopic examination, fungal isolates code 6 can be classified into:
Kingdom : Fungi
Phylum: Ascomycotae
Class : Eurotiomycetese
Order: Eurotialese
Family : Trichocomaceae
Genus: Aspergillus
Species : Aspergilus sp

G. Fungus Insulation 7

Fungal isolate 7 was obtained from patient code 7A. The pure isolates obtained were identified and observed

by macroscopic and microscopic methods. Through macroscopic testing of fungal isolates 7, the criteria in Table 4.13 were obtained.

Table 13 Macroscopic Test Results of Fungal Isolate 7

No	Observed Features	Observation result
1.	Colony color	brownish gray
2.	Base color in medium	brownish gray
3.	Reverse Nature	brownish gray
4.	Colonial Nature	Fine Powder

(Source: Primary Data, 2021)

What is very clear is that microscopic and macroscopic testing in isolate media can be reviewed.

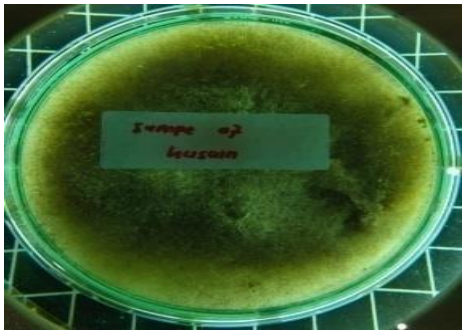


Figure 16 : Top View
Source: Primary Data 2021

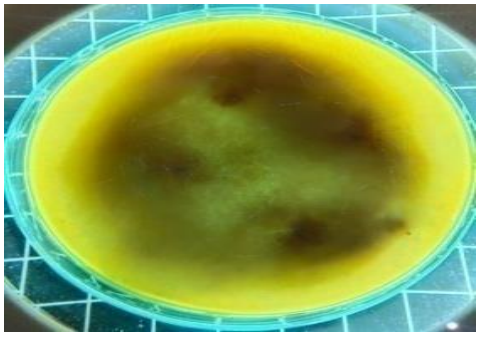


Figure 17 : Top View
Source: Primary Data 2021

Figure 18 : Microscopic 400x
Source: Primary Data 2021

In accordance with the microscopic testing carried out on fungal isolates 7, the criteria in table 4.14

Table 14 Microscopic Testing of 7 . Fungal Isolate

No	Observed characteristics	Observation result
1.	hyphae:	
	a. Slept/ no	No Parting
2.	Sporangia:	
	a. Is there any or not	There is Round
	b. Shaped	
3.	Sporangiophores:	
	a. Is there any or not	There is Upright
	b. Shaped	Dark
	c. Color	brown
4.	Stolon :	
	c. Color	Chocolate
	d. Shape	Fine
5.	Rhizoid :	
	e. Shape	branch
	f. Color	Chocolate

(Source: Primary Data, 2021)

From the characteristics of certain macroscopic and microscopic examinations so that the fungal isolate code 7 can be classified into:
Kingdom : Myceteae
Division: Zygomycota
Class: Zygomycotes
Order: Mucorales
Family : Mucoraceae
Genus: Ryzopus

Species: Ryzopus sp (Watanabe, 1937)

H. Fungus Insulation 8

Fungal isolate 8 was obtained from patient code 8A. The pure isolates obtained were identified and observed by macroscopic and microscopic methods. Through macroscopic testing of fungal isolates 8, the criteria in Table 4.15 were obtained.

Table 15 Macroscopic Test Results of Fungal Isolate 8

No	Observed Features	Observation result
1.	Colony color	White
2.	Base color in medium	White
3.	Reverse Nature	White
4.	Colonial Nature	Fine Powder

(Source: Primary Data, 2021)

What is very clear is that microscopic and macroscopic testing in isolate media can be reviewed.

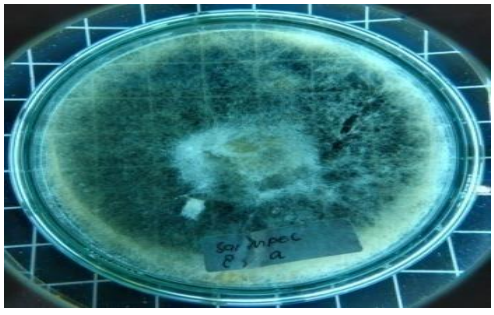


Figure 19 : Top View
Source: Primary Data 2021

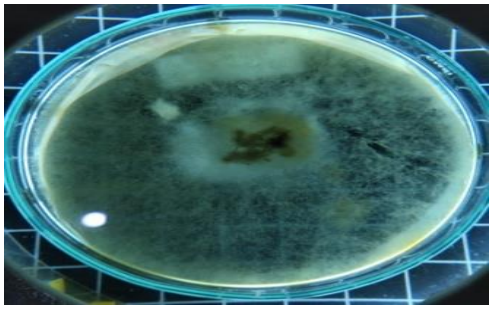


Figure 20 : Top View
Source: Primary Data 2021

In accordance with the microscopic testing carried out on fungal isolates 8, the criteria in table 4.16 . were obtained

Table 16 Microscopic Testing of Fungal Isolates 8

No	Observed characteristics	Observation result
1.	hyphae: a. Slept/ no	No Parting
2.	Sporangiophores: a. Is there any or not b. Shaped	There is branch
3.	Columella: a. Is there any or not b. Shaped c. Color	There is Round White
4.	Stolon : a. Color b. Shape	White Fine

(Source: Primary Data, 2021)

From the characteristics of certain macroscopic and microscopic examinations so that the fungal isolate code 8 can be classified into:

Kingdom : Myceteae
Division: Zygomycota
Class: Zygomycotes
Order: Mucorales
Family : Mucoraceae
Genus: Mucor
Species : Mucor sp

I. Mildew Insulation 9

Fungal isolates 9 were obtained from patient code 9. The pure isolates obtained were identified and observed by macroscopic and microscopic methods. Through macroscopic testing of fungal isolates 9, criteria such as Table 4.17 were obtained.

Table 17 Macroscopic Test Results of Fungal Isolate 9

No	Observed Features	Observation result
1.	Colony color	Greenish Yellow
2.	Base color in medium	Greenish Yellow
3.	Reverse Nature	Greenish Yellow
4.	Colonial Nature	Coarse Powder

(Source: Primary Data, 2021)

What is very clear is that microscopic and macroscopic testing in isolate media can be reviewed.

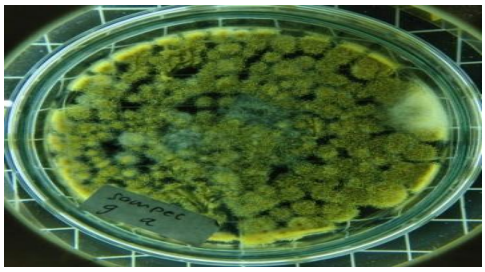


Figure 21 : Top View
Source: Primary Data 2021

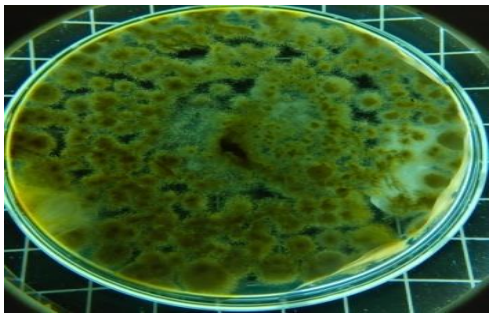


Figure 22 : Top View
Source: Primary Data 2021

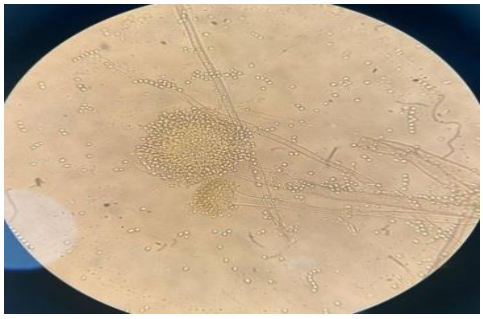


Figure 23 : Microscopic 400x
Source: Primary Data 2021

In accordance with the microscopic testing carried out on fungal isolates 9, criteria such as table 4.18 . were obtained

Table 18 Microscopic Testing of Fungal Isolate 9

No	Observed characteristics	Observation result
1.	hyphae: a. Slept/ no	No Parting
2.	Sporangiophores: a. Is there any or not b. Shaped	There is branch
3.	Columella: a. Is there any or not b. Shaped c. Color	There is Round White
4.	Stolon : a. Color b. Shape	Yellow Fine

(Source: Primary Data, 2021)

From the characteristics of certain macroscopic and microscopic examinations so that the fungal isolate code 9 can be classified into:
Kingdom : Myceteae
Division: Zygomycota
Class: Zygomycotes

Order: Mucorales
Family : Mucoraceae
Genus: Mucor
Species : Mucor sp

J. Mushroom Insulation 10

Fungal isolates 10 were obtained from patients with code 10. Pure isolates were obtained, identified and observed by macroscopic and microscopic methods. Through macroscopic testing of the 10 fungal isolates, criteria such as Table 4.19 were obtained.

Table 19 Macroscopic Test Results of Fungal Isolate 10

No	Observed Features	Observation result
1.	Colony color	Greenish Yellow
2.	Base color in medium	Greenish Yellow
3.	Reverse Nature	Greenish Yellow
4.	Colonial Nature	Coarse Powder

(Source: Primary Data, 2021)

What is very clear is that microscopic and macroscopic testing in isolate media can be reviewed.

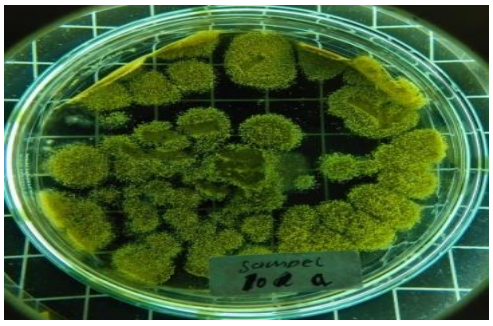


Figure 24 : Top View
Source: Primary Data 2021

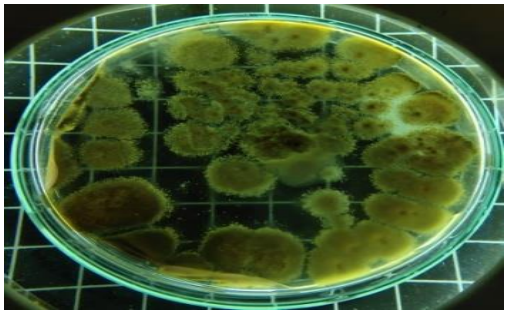


Figure 25 : Bottom View
Source: Primary Data 2021

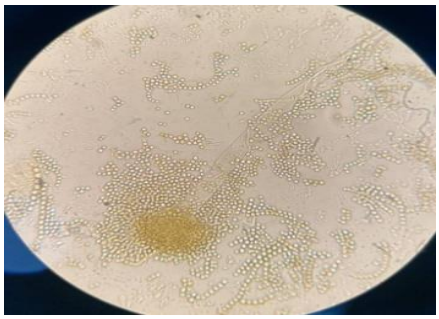


Figure 26 : Microscopic 400x
Source: Primary Data 2021

In accordance with the microscopic testing carried out on fungal isolates 10, the criteria similar to those in table 4.20

Table 20 Macroscopic Test Results of Fungal Isolate 10

No	Observed characteristics	Observation result
1.	hyphae: a. Slept/ no	No Parting
2.	Sporangiophores : a. Is there any or not b. Shaped	There is branch
3.	Columella: a. Is there any or not b. Shaped c. Color	There is Round White
4.	Stolon :	

a. Color	Yellow
b. Shape	Fine

(Source: Primary Data, 2021)

From the characteristics of certain macroscopic and microscopic examinations to code 10 fungal isolates, they can be classified into:

Kingdom : Myceteae
Division: Zygomycota
Class: Zygomycotes
Order: Mucorales
Family : Mucoraceae
Genus: Mucor
Species : Mucor sp

DISCUSSION

The sampling location was carried out at the Environmental Service of Gorontalo City, then the samples were examined at the Microbiology Laboratory of the Health Analyst Diploma III Program at Bina Mandiri University, Gorontalo.

Based on the results of research on the culture method, 4 samples of brownish gray colonies were obtained, 2 samples of white colonies, 2 samples of brownish-yellow colonies, 2 samples of greenish-yellow colonies, as for observations using the microscopic method, the results obtained the presence of several fungi, of which the fungi found were: 4 samples of Rhizopus sp, 2 samples of Mucor sp, 4 samples of Aspergilluse sp.

In accordance with the results of the study, it can be concluded that the fungus that infects the toenails of the Environmental Service (DLH) workers does not cause Tinea unguium disease. This is in accordance with the theory byArianti (2015), which states that mushrooms*Ryzopus*sp causes complications of Diabetes Mellitus (DM) which is characterized by an increase in Ketones in the blood (body), Meanwhile Mucor sp causes Mucormycosis which attacks parts through the body including the lungs, digestive tract and skin. The fungus Aspergillus sp causes Aspergillosis, which is an infection of the respiratory tract.

There are several species of fungi in toenails of Gota Gorontalo City Environmental Service officers This is reinforced by some data obtained during interviews, namely data on hand, foot and nail hygiene along with skin hygiene. These results were obtained from direct observations made when they wanted to take a sample of nail scrapings at the DLH officer. The results of the observation were that all the conditions of the hands, feet, nails, and skin of the Gorontalo City DLH officers were not clean. In addition, the nails of the DLH workers are usually brown in color and some are even black and if observed carefully there is thickening of the nails.

The results of the researcher's observations are in line with Arianti's theory (2015), which states that severe fungal infections can cause discoloration of the nail plate to white, yellow, brown, to black. The infection can affect some parts of the nail but not the wholeinfected nails. When infected with fungus in the nail is still classified as mild so it does not require healing. However, sometimes a nail fungal infection can cause pain and thickening of the nail. In some nails it becomes very thickened and appears to lift at the base of the attachment or onycholysis. In addition, Kurniawati (2006), added that the characteristics or signs that the nails have a fungal infection are:The nails become thickened, the nails become brittle, the nail formation is dull, the color in the nails turns dark and the skin around the nails becomes inflamed or scaly.

As for the discovery of several species of fungi on the toenails of DLH officers which were not clean, causing infection of the nails, some fungal diseases (though not the cause of Tinea unguium) according to the researchers, were caused by the activities carried out by certain cleaners. Certain matters are based on Harahap's (2003) theory which reveals where fungi can be found everywhere, including on fingernails and toenails.

Besides that, the observation data is supported by the statement of Setianingsih, et al. (2015), which revealed where an impact that can cause infection of the nails is:if someone washes their hands very often or is in direct contact with water. A worker with a cook or as a cleaner can wash his hands so badly that it can damage the skin that can protect the nails so that in some cases the possibility of fungus can enter.

So it can be concluded that the presence of fungal species on the toenails of janitors at the Gorontalo City Environmental Service (DLH) is more due to direct contact with the garbage cleaned by the janitor.

This matter is further strengthened by the theory of Kurniawati (2006) which reveals where the disturbance is through the skinIt is always experienced in the toes, especially on the third and fourth and fourth and fifth toes, the sole of the foot with the lateral part of the foot. The impact of the life of the Dermatophytae fungus in certain parts can arise because the feet are still wet, either in the presence of water, or the presence of sweat (shoes covered with socks) for a long time. In order to support the life of mushrooms in humid conditions. Besides the cause of wearing closed shoes for a long time, increased humidity due to sweating, skin rupture due to mechanical reasons, the level of individual hygiene, with exposure to the presence of fungi are risk factors that lead to the formation of Tinea unguiume.

CONCLUSION

In accordance with observational data, so that conclusions can be drawn where percentage tinea ungium infection on the toenails of the Department of Environment (DLH) officers in Gorontalo City by 0%, where no fungal species that cause Tinea unguium were found in the toenail samples of DLH officers in Gorontalo City.

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