

# USUS NEMATODES IDENTIFICATION OF KEMANGI LEAVES FOR SALE IN THE LIMBOTO CENTRAL MARKET, GORONTALO DISTRICT

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## ABSTRACT

Until now, worm disease is still a public health problem in the region tropical, especially those caused by intestinal nematodes which are transmitted through soil or often called Soil Transmitted Helminthes (STH). Basil leaves that are not washed clean are likely to contain intestinal nematodes, namely *Ascaris lumbrucoides*, *Trichuris trichiura* and *Ancylostoma duodenale*. The purpose of this study was to detect the presence or absence of intestinal nematode eggs and any type of intestinal nematode on basil leaves sold at the Limboto Central market.

This type of research is descriptive qualitative. Analysis using data analysis techniques were analyzed descriptively then the results are presented in the form of tables and figures.

Based on the results of research conducted from 20 samples of basil leaves sold in the limboto central market, it was found that 55% positive results were intestinal nematodes consisting of 2 types, namely *Ascaris lumbricoides* as much as 72.7% and *Ancylostoma duodenale* as much as 27.3%.

**Keywords:** *Ascaris lumbricoides*; *Ancylostoma duodenale*; Basil

## INTRODUCTION

Indonesia, which is a tropical country, is rich in plants with many benefits in it. There are food crops, fruits, vegetables or other types of plants. One type of plant favored by people in Indonesia is vegetables. Vegetables have many kinds with various properties. Apart from being consumed as cooked vegetables, there are also types of vegetables that are consumed raw or called fresh vegetables [1]

The habit of eating raw vegetables needs to be careful, especially if the washing is not good so that it is possible to still have worm eggs in the basil plant. If the processing and washing of vegetables is not good, worm eggs may still be attached to the vegetables [2] the use of fecal fertilizer is one of the causes

of vegetable contamination by parasites as well as the use of irrigation water [3]

Until now, worm disease is still a public health problem in the region tropical, especially those caused by intestinal nematodes that are transmitted through soil or often called Soil Transmitted Helminthes (STH). There are several types of intestinal nematodes included in STH, namely roundworms (*Ascaris lumbricoides*), hookworms (*Ancylostoma duodenale* and *Necator americanus*), whipworms (*Trichuris trichiura*) and several *Strongylus* species [4]. This disease can cause a decrease in health conditions, nutrition due to the loss of carbohydrates, protein and blood which in turn results in children causing growth

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and development disorders and decreased learning concentration [5].

This disease can cause a decrease in health conditions, nutrition due to the loss of carbohydrates, protein and blood which in turn results in children causing growth and development disorders and decreased learning concentration [5].

The incidence of worm disease in the world is still relatively high, data from the World Health Organization (WHO) in 2016, shows more than 1.5 billion people or around 24% of the world's population infected with STH. The highest incidence rates are in sub-Saharan Africa, America, China and East Asia [6] Until finally on September 29 2017 WHO published new recommendations to eradicate worms on a large-scale (large-scale deworming), in order to improve the health and nutritional status of children. 7].

The government in this case the Ministry of Health has organized worm disease control program where the aim of these programs and activities is to reduce the number of worms and not become a public health problem. In 2014, as much as 75% of the Province has implemented the Program worm disease control and target coverage Nasional reach at least 50% and in the year 2016 increased by 100% Province and 75% Districts / cities have implemented the Program and it is hoped that in 2020 all Provinces and district / city has implemented the program these [8].

In Gorontalo Province, especially in Gorontalo District, in 2018 a survey of STH infections was conducted in 41 elementary schools by taking 334 stool samples and obtained 29 samples of STH infected with STH. With a worm prevalence of 8.7%, (based on the WHO prevalence classification) [9]. The high incidence of this disease is influenced by the low level of personal sanitation such as not washing hands before eating and eating raw, unwashed vegetables such as

basil leaves. Basil leaves that are not washed are likely to still contain germs due to contamination, one of which is intestinal nematode worms, namely *Ascaris lumbricoides*, *Trichuris trichiura* and *Ancylostoma duodenale* or *Necator americanus*, which can cause worms in humans (Srianna, et al., 2012) . In addition, another factor that affects the incidence of worms is the environment that supports the development of STH, namely loose and moist soil conditions [3].

There were 37 (39.8%) samples of basil leaves from roasted fish traders in the city of Palu with positive samples of Soil Transmitted Helminth (STH) eggs, namely *Ascaris lumbricoides* 70.3%, Hookworm 16.2%, a mixture of *Ascaris lumbricoides* and Hookworm 10.8%, a mixture of *Ascaris lumbricoides* and *Trichuris trichiura* 2.7% [11]. Of the 12 samples of basil leaves from the Bandar Lampung pecel catfish stall, 1 (8.3%) samples of basil leaves were positive for *Ascaris lumbricoides* eggs [11].

Based on the observations that have been made on the seller of basil leaf vegetables in the Limboto Central Market, Gorontalo District still does not pay attention to cleanliness, namely during the washing process some of the basil leaves are not washed and some are only rinsed in a container instead of water, some sellers are located close to an unclean ditch. .

The high incidence of this disease is influenced by the low level of personal sanitation such as not washing hands before eating and eating raw vegetables that are not washed clean such as basil leaves.

Based on this description, the researchers wanted to conduct research related to intestinal nematode eggs on basil leaves which are widely consumed by the public, which is formulated with the title "Identification of Intestinal

Nematodes in Basil Leaves Sold at the Limboto Central Market".

**RESEARCH METHODS**

This research is a qualitative descriptive research. The location of the research was carried out at the Microbiology Laboratory of Bina Mandiri University Gorontalo and the sampling location was Limboto Central Market, Gorontalo District. The time of this research was carried out from October to November 2020.

The population in this study is the basil leaves sold by sellers in the Limboto Central market, Gorontalo Regency, totaling 20 sellers and the sample is the entire population of basil leaves sold by sellers in the Limboto Central market, Gorontalo Regency. The sampling technique used in this study is random sampling.

The tools used in this study were basin (container for basil), centrifuge tube, centrifuge, dropper, tube rack, tweezers, glass object, deck glass and microscope. The materials used in this study were: NaCL 0.9%.

Preparation and Sampling: Prepare a container for sampling that has been labeled so as not to be confused. Then take a sample of basil leaves from each seller in the limboto market then put it into each container that has been provided. Working procedure, namely Basil leaves soaked in 0.9% NaCL solution for 30 minutes. The basil leaves are removed and the remaining water is put into a centrifuge tube then centrifuged at 1500 rpm for 5 minutes. Then discard the supernatant from the centrifuge.

Take 1 drop of sediment placed on the slide and cover with a cover glass. Microscopic examination was performed to detect the presence of intestinal nematode eggs with a magnification of 10-40 times. The intestinal nematode eggs found were characterized based on

morphological characters to identify the type of intestinal nematode (STH) based on the character of the nematode eggs in the Parasitology Atlas book. The results are recorded on the worksheet that has been prepared.

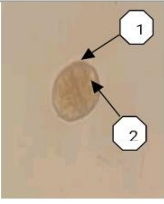
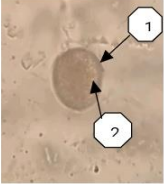
Interpretation as follows (+): Found types of intestinal nematode eggs on basil leaves such as *Ascaris lumbricoides*, *Trichuris trichiura* and *Ancylostoma duodenale* (*Necator americanus*) and (-): No intestinal nematode eggs were found on basil leaves such as *Ascaris lumbricoides*, *Trichuris trichiura* and *Ancylostoma duodenale* (*Necator americanus*).

The data obtained were analyzed descriptively, namely describing the types of intestinal nematodes that were identified from the basil leaves sold in the Limboto central market using the Atlas of Medical Helminthology and Protozoology reference.

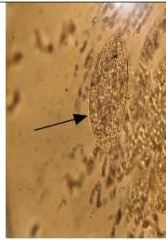
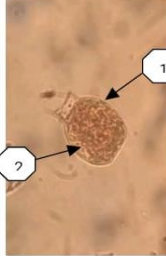
**RESEARCH RESULT**

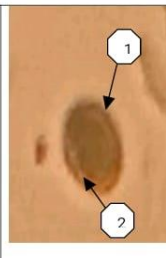
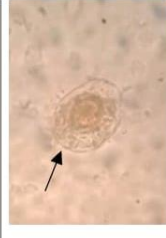
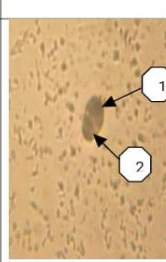
Based on the results of research that has been carried out on 20 samples of basil leaves obtained in the Limboto Central Market, Gorontalo Regency, the results are shown in:


**Table 1.**Results of Research on Intestinal Nematodes on Basil Leaves

Kode Sampe l	Jenis Nematoda	Gambar	Keterangan
1	<i>Ascaris lumbricoide s</i>		Tipe 1 : Telur dibuahi Bentuk agak bulat, lapisan albuminoid agak tebal dan teratur sedangkan laipsan hialin bening a. Albuminoid b. Hialin
2	<i>Ascaris lumbricoide s</i>		Tipe 1 : Telur dibuahi Bentuk agak bulat, lapisan albuminoid agak tebal dan teratur sedangkan laipsan hialin bening 1. Albuminoid

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3	<i>Ancylostoma duodenale</i>		Berbentuk lonjong dan dinding tipis tidak berwarna
4	-	-	-
5	<i>Ascaris lumbricoides</i>		Tipe 2 : Telur tidak dibuahi Bentuk lonjong, lapisan albuminoid tipis dan tidak teratur, lapisan hialin bening dan tebal dan berisi sel yang atropis (sel yang rusak) 1. Albuminoid 2. Hialin
6	-	-	-
7	-	-	-
8	-	-	-

14	<i>Ascaris lumbricoides</i>		Tipe 1 : Telur dibuahi Bentuk agak bulat, lapisan albuminoid agak tebal dan teratur sedangkan lapisan hialin bening 1. Albuminoid 2. Hialin
15	<i>Ancylostoma duodenale</i>		Berbentuk lonjong dan dinding tipis tidak berwarna
16	-	-	-
17	<i>Ascaris lumbricoides</i>		Tipe 2 : Telur tidak dibuahi Bentuk lonjong, lapisan albuminoid tipis dan tidak teratur, lapisan hialin bening dan berisi sel yang atropis (sel yang rusak) 1. Albuminoid

		Perbesaran 100x	2. Hialin
18	<i>Ancylostoma duodenale</i>		Berbentuk lonjong dan dinding tipis tidak berwarna
		Perbesaran 400x	
19	-	-	-
20	-	-	-

Source: (Primary Data 2020)

Based on Table 4.1, it can be seen that from 20 samples of basil leaves were obtained 55% positive results identified as intestinal nematodes consisting of 2 types, namely *Ascaris lumbricoides* as much as 72.7% and *Ancylostoma duodenale* as much as 27.3%.

## DISCUSSION

Based on the results of the study of 20 samples of basil leaves, 11 samples (55%) were positively identified for nematodes and 9 samples (45%) were negative or there were no intestinal nematode worm eggs. The types of intestinal nematodes found were *Ascaris lumbricoides* with 8 (eight) samples or 72.7% and *Ancylostoma duodenale* as many as 3 (three) samples or 27.3%.

*Ascaris lumbricoides* adults have the characteristics of an elliptical (cylindrical) shape, the two smaller ends are brownish yellow and in the mouth there are 3 lips. Based on the research results obtained *Ascaris lumbricoides* with fertilized egg type and cooked egg type. that fertilized eggs are characterized by a slightly round shape, measuring 60 x 45 µm, the albuminoid layer is rather thick and regular, while the hyaline layer is clear, thick and for mature eggs it is characterized by a slightly round shape

and sometimes contains larvae [13]. Furthermore, *Ancylostoma duodenale* and *Necator americanus* have characteristics, namely oval, measuring 60 x 40 µm, walls: thin, clear, colorless. Egg contents in fresh feces are embryo stage morula 2 - 16 eggs and egg contents in the old stool of larvae [14].

The discovery of the species of *Ascaris lumbricoides* (*A. lumbricoides*) in the majority (72.7%) of the basil leaves examined in this study was more due to the nature of the *A. lumbricoides* eggs in the soil that are still alive at temperatures usually found in winter. Eggs are resistant to chemical disinfectants and to temporary immersion in various harsh chemicals. *A. lumbricoides* eggs can live for months in sewer water. This is supported by the theory that clay, high humidity and temperatures of 25o-30oC are excellent conditions for the development of *A. lumbricoides* eggs into an infective form [6].

The *Ancylostoma duodenale* species were found in 3 (three) samples or 27.3%, while the *Trichuris trichiura* species were not found. The absence of *Trichuris trichiura* species in this study was inseparable from the different life cycle of *Trichuris trichiura* and *Ancylostoma duodenale* / *Necator americanus* worms.

This result is also in accordance with a survey conducted in several places in Indonesia which shows that the prevalence rate of *Ascaris lumbricoides* is quite high at 60-90%, regarding the contamination of intestinal nematode worm eggs in basil vegetables by grilled fish traders in Palu City, Central Sulawesi who received positive results ( worm eggs were found) in 37 samples (39.8%) with the most species being *Ascaris lumbricoides* 70.3%, *Ancylostoma duodenale* at 16.2%, mixed infection of *Ascaris lumbricoides* and *Ancylostoma duodenale* 10.8% [15].

The high percentage of intestinal nematode worms found in basil leaves sold in the Limboto central market is caused by poor sanitation of the market environment, processing at the consumer level (Market traders) so that it has an appreciable effect on increasing intestinal nematode infections and the hygienicity of market traders, especially in relation to the cleanliness of basil which is on sale.

This result is supported by the results of previous studies which show that there are several factors that affect the cleanliness of processing and utilization of vegetables consumed by humans, such as how to wash vegetables and washing techniques, which need to be considered. The use of running water is more recommended than using water that is still (stagnant), such as water in a water tub that is used to wash vegetables repeatedly. This can affect the risk of contamination by various types of pollutants both organic and inorganic (pesticides). If intestinal nematodes enter the body it will cause anemia, intestinal obstruction so that the stomach can feel pain and severe vomiting occurs, there is blood when defecating, and weight loss [16].

The spread of intestinal nematode worm eggs can also be through washing the basil leaves which are not good, during the planting of the basil there are environmental influences that allow food insecurity and the debris on the basil. Thus washing is absolutely necessary before basil is consumed. Prevention of intestinal nematodes is mainly by maintaining hygiene and sanitation, not defecating in any place, protecting food from fecal contamination, washing hands before eating, and not using human feces as plant fertilizer [17].

Meanwhile, another study that examined the presence of intestinal nematode worm eggs showed that no intestinal nematode eggs were found in basil leaves so that it is safe for public

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consumption. This could be because the sales distribution has a fairly good level of hygiene. Several other influencing factors, namely cleanliness in the processing and utilization of vegetables such as how to wash vegetables or use running water is more recommended than stagnant water [18].

### CONCLUSION

Based on the results of research conducted examination of intestinal nematode worm eggs on basil leaves sold in the Limboto central market, Gorontalo District, from 20 samples obtained 2 types of intestinal nematodes, namely 72.7% *ascaris lumbricoides* and 27.3% *ancylostoma duodenale*. as much as 55% positive and negative as much as 45%.

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