

Identification Of Ascaris Lumbricoides Worm Eggs On Vegetables (Brassica Juncea)

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ABSTRACT

Introduction: Mustard greens (*Barassica juncea*) is one of the vegetables that are often consumed by the community in a half-cooked condition and cooked in a light way that allows eggs, larvae, and worms of *Ascaris lumbricoides*. *Ascaris lumbricoides* worm eggs have excellent resistance in hot and humid environments, if the cleaning process is not clean and the cooking method is not correct, it can cause *Ascaris lumbricoides* worm eggs to enter a person's body and cause worm infections.

Methods: This type of research is descriptive with laboratory observations. The technique used is total sampling with 12 bunches of mustard greens samples from 12 vegetable traders at Pasar Legi Jombang. Identification of eggs of the worm *Ascaris lumbricoides* on mustard greens (*Barassica juncea*) sold at Market place Jombang by sedimentation method and microscopically. Data analysis is expressed in the form of a percentage.

Results: The results of the study The identification of *Ascaris lumbricoides* worm eggs in mustard greens (*Barassica juncea*) sold at Pasar Legi Jombang showed positive results for 4 samples (33%) and negative results for 8 samples (67%) of the 12 samples studied

Conclusion: identification *Ascaris lumbricoides* worm eggs on mustard (*Barassica juncea*) sold at the Legi Jombang market showed that almost half of the mustard greens samples were positive for *Ascaris lumbricoides* worm eggs.

Keywords: Mustard (*Barassica juncea*), *Ascaris lumbricoides*, helminth infection

INTRODUCTION

Worm infections that are widespread in Indonesia can be caused by supporting factors, including the growth of parasites caused by environmental sanitation and poor population habits (Sihombing & Gultom, 2018). The habit of eating vegetables as fresh vegetables with a washing process that is not clean can also cause worm infections, this is due to the presence of eggs, larvae from worms, especially the Soil-Transmitted Helminth type attached to vegetables. Besides that, farmers often use organic fertilizers in the form of humus, animal waste, and even human feces. as fertilizer on vegetables, it allows vegetables to be contaminated due to the attachment of Soil-Transmitted Helminth eggs to the vegetables. This raw vegetable can be a source of transmission of crystals,

protozoa, worms, eggs, and larvae. Eating vegetables raw or lightly cooking can increase the occurrence of worm infections (Mutiara, 2015).

According to data from the World Health Organization (WHO) in 2019, 1.5 billion people, 24% of the world's population, have been infected with Soil-Transmitted Helminths (STH) worldwide. The infection is quite abundant in the tropics and subtropics with the largest number of infected people in Sub-Saharan Africa, America, China, and Southeast Asia (WHO, 2017). In Indonesia, the number of worms caused by Soil-Transmitted Helminths (STH) in 2017 has reached about 28.12% (Kemenkes RI). Data from the East Java Health Office of Jombang Regency in 2018 worm infections still occur at all ages as many as 837 cases of worm infection.

Transmission of worm disease can be through plants indirectly. The habit of eating raw vegetables as fresh vegetables in some people in Indonesia also supports the risk of worm infection. This mustard vegetable (*Barssica juncea*) is often consumed as a mixture in several dishes such as meatballs, chicken noodles, and fried rice where these vegetables are often half cooked and less hygienic (Tiara, 2019). Previous research conducted by Jasman et al (2019) found the results of research on vegetables that were heavily contaminated by the egg worm parasite *Ascaris lumbricoides*, namely lettuce and mustard greens as many as 5 vegetables (10%), and continued with the least contaminated with the egg worm parasite *Ascaris lumbricoides*, namely scallions, cabbage, spinach as much as 1 vegetable (2%). Meanwhile, according to research conducted by Septia et al (2020), the results of the distribution of intestinal nematode prevalence based on species showed that there were no *Ascaris lumbricoides* worm eggs or *Trichuris Trichiura* eggs but hookworm larvae (*Rhabdilitoform* larvae and *Filariform* larvae) were found. According to research by Alfani et al (2018), research on fresh vegetables at Pujasera Simpang Lima Koata Semarang found the results that fresh cabbage was very potentially contaminated with *Ascaris lumbricoides* worm eggs (27.3%), while for *Trichuris* egg contamination (18.2%) and hookworm (9.1%).

The habit of eating vegetables needs to be careful if washing is not good enough to allow the presence of eggs, larvae, cysts, and worms. In raw vegetables, washing that is not clean is very possible, because considering the lack of hygiene in the kitchen where the traders prepare for handling, plus the lack of awareness of food traders and the public about the dangers caused by worm infection (Lobo & Widjadja, 2016). Ways that can be done so that the transmission of worms through vegetables can be cut off, namely by not using human or animal feces as fertilizer for plants and using PPE such as gloves when doing gardening activities. For the matter of consuming vegetables, it is better to wash the vegetables per sheet using running water from the faucet. Pay attention to the processing process, especially for the level of ripeness of vegetables and hygienic storage of vegetables to avoid helminth infections.

METHODS AND MATERIALS

This research is descriptive with a laboratory approach to describe the results of the identification of *Ascaris lumbricoides* eggs on mustard greens (*Barassica juncea*) which are sold at Legi Market, Jombang. In this study, samples of mustard greens were examined using the sedimentation method because this method was able to deposit worm eggs without damage to the worm eggs. The sampling used for this research is a total sampling with a sample of 12 bunches of mustard greens obtained from 12 traders at the Legi Jombang market. The variable in this study was the identification of the eggs of *Ascaris lumbricoides* in mustard greens (*Barassica juncea*). The results of

the examination if declared positive if eggs of the *Ascaris lumbricoides* worm are found, if negative, no eggs of the *Ascaris lumbricoides* worm are found.

The procedure of this research started from preparing the tools and materials, taking the mustard greens and then cutting them into small pieces, soaking the chopped mustard greens in 30 salts with 25 ml of 0.9% NaCl in a beaker glass, waiting for 30 minutes, After that, it is stirred using a stir bar, inserting 0.9% NaCl solution into a test tube as much as 3/4 of the volume of the tube, after that it is centrifuged at 200 rpm for 10 minutes, discarding 0.9% NaCl solution and pipetting the precipitate. in a test tube, drip 1 drop of the precipitate on the object-glass and cover it with a cover glass, visualize under a microscope with a magnification of 10x, 40x with a total of 10 fields of view, and record the results found in the examination. Data processing techniques using coding and tabulating with using descriptive data analysis and using a frequency distribution table

RESULTS AND DISCUSSION

The results of this study were the identification of *Ascaris lumbricoides* worm eggs in mustard greens (*Barassica juncae*) sold at Pasar Legi Jombang. Data was obtained from the microscopic examination of mustard greens (*Barassica juncae*) samples to determine the presence of *Ascaris lumbricoides* worm eggs using the sedimentation method. Sedimentation method using centrifugation technique with 0.9% NaCl microscopically. The results of the study were shown by showing the eggs of the worm *Ascaris lumbricoides* in the form of fertile or infertile. The results of the study are shown in table 1 as follows:

Table 1 Research Results Identification of Worm Eggs *Ascaris lumbricoides* on mustard greens (*Barassica Juncea*) sold at Legi Market, Jombang

No	Research result	Frequency	%
1	Positive	4	33%
2	Negative	8	67%
	Amount	12	100%

Based on table 1 shows the results of almost half of the research sample identification of *Ascaris lumbricoides* worm eggs in mustard greens (*Barassica Juncea*) showing positive results as many as 4 samples (33%) and negative results as many as 8 samples (67%) from 12 samples studied.

Mustard greens are one type of vegetable that is often consumed by the community as a mixture of meatballs, chicken noodles, and raw vegetables. Judging from the texture of mustard greens, which is almost similar to cabbage, the first leaf that grows will cover the next leaf that will grow to form an oblong crop. From this texture, *Ascaris lumbricoides* worm eggs may settle on the sidelines of the stems and leaves. People or consumers of raw vegetables are sometimes negligent in not paying attention to the washing process that is not clean or how to store them, cooking them only lightly. This directly allows the *Ascaris lumbricoides* worm eggs to remain in the mustard greens. And become a means of worm infection. Other factors that cause eggs, worms, and larvae of *Ascaris lumbricoides* to be present in mustard greens include traders not washing the vegetables they sell first or the containers selling mustard greens directly in contact with the ground. Sometimes farmers

use fertilizer from animal and human waste. The farmers also during the watering process use water from sewers and rivers where the water is contaminated with human feces. *Ascaris lumbricoides* worm eggs are found in animal feces, humans, these eggs can survive in humid and hot temperatures which results in eggs not dying easily and developing well.

According to Lobo & Widjaja (2016) which states that the habit of eating raw vegetables needs to be careful if washing is not good, it allows eggs, larvae, and worms to still be present. In raw vegetables, washing that is not clean is very possible, because considering the lack of hygiene in the kitchen where the traders prepare for handling, plus the lack of awareness of food vendors and the public about the dangers caused by helminth infections. The same thing was also stated by (Mutiara, 2015) this raw vegetable can be a source of transmission of crystals, protozoa, worms, eggs, and larvae. Eating vegetables raw or lightly cooked can lead to helminth infections.

According to Syahputri (2015) in Jasman 2019 things that can cause lettuce, cabbage, mustard greens, leeks and prai are plants that are very close to the ground so that they are easy to be contaminated with parasites, and are supported by the structure of vegetables that are curved and layered so that allows eggs, crystals, worm larvae to settle in it. It could also be during sampling, in traditional markets traders generally sell their wares by using tarpaulins which are placed on the ground and close to the ground so that the possibility of contamination is quite large. The same thing was stated by previous researchers.

Previous researchers conducted by Putri et al (2020) stated that vegetables are agents that are often contaminated by STH (Soil-Transmitted Helminths) eggs, especially the eggs of the worm *Ascaris lumbricoides*. Because the eggs of *Ascaris lumbricoides* worms have characteristics including having good resistance in hot or humid environments. *Ascaris lumbricoides* worm eggs will die at a temperature of more than 40 °C within 15 hours while at a temperature of 50 °C will die in a matter of 1 hour. *Ascaris lumbricoides* eggs also have other properties, namely, the eggs can survive in disinfectants and chemical solutions such as NaOH 0.2, NaCl 0.9 which are used in research. (Putri & Fitri, 2020).

Worm infections that occur are generally caused by factors from the humans themselves. Lack of sanitation and unhygienic environmental hygiene, consuming raw vegetables without paying attention to the correct washing method and cooking methods, especially the correct level of maturity so that eggs, larvae, *Ascaris lumbricoides* worms, and other types of intestinal nematodes such as STH (Soil Transmitted Helminths) stick to the vegetables to be eaten. consumed.

CONCLUSION

The results of the identification of *Ascaris lumbricoides* eggs on mustard greens (*Barassica juncea*) sold at the Legi Jombang market, almost half of the samples of mustard greens sold in the Legi market in Jombang were contaminated with *Ascaris* worm eggs.

BIBLIOGRAPHY

Agni, F. (2018). Identification of STH (Soil-Transmitted Helminth) Worm Eggs on Basil Leaves. *Cendekia Medika Jombang's Insan Stikes*.

Alifah, S., Nurfida, A., & Hermawan, A. (2019). Processing of Mustard Greens into Green Noodles That Have High Economic Value in Sukamanis Village, Kadudampit District, Sukabumi

Anjeliza, RY (2013). Growth and Production of Mustard Greens *Brassica juncea* L. In Various Hydroponic Designs. Hasanudin University Makassar.

Arfiana, V. (2020). Identification of *Ascaris Lumbricoides* Eggs in Cabbage (*Brassica Oleracea*) at Ngimbang Lamongan Traditional Market. *Jombang Medika Cendekia Insan Stikes*.

Aulianof, VF (2019). Examination of Intestinal Nematode Worm Eggs on Students of SDN 31 Batang Barus, Solok Regency [Pioneer College of Health Sciences]. In *Sustainability (Switzerland)* (Vol. 11, Issue 1).

Fitri, M. (2020). Analysis of Soil-Transmitted Helminthes Worm Eggs on Nails of Elementary School Students. 5, 131–141.

Jasman, RP, Sitepu, R., & Oktaria, S. (2019). Differences in Soil-Transmitted Helminths (Sth) in Vegetables in Traditional and Modern Markets. *Journal of Medical and Health Sciences*, 6 (1), 57–65. <https://doi.org/10.33024/jikk.v6i1.944>

Lobo, LT, & Widjadja, J. (2016). on Basil Vegetables Grilled Fish Trader in Palu City, Central Sulawesi. 65–70.

Mutiara, H. (2015). Identification of Contamination of Soil-Transmitted Helminths Egg on Food Made from Raw Vegetables Sold in Canteens Around the University of Lampung Bandar Lampung Campus Identification of Contamination of Soil-Transmitted Helminths Egg on Raw Vegetables Food at. *JuKe Unila*, 5 (9), 29–32.

Putri, U., & Fitri, AD (2020). Contamination of Soil-Transmitted Helminths on Cabbage and Lettuce at Traditional Markets in Jambi City. *Electronic Journal Scientific of Environmental Health And Disease*, 1 (1).

Sihombing, JR, & Gultom, E. (2018). Analysis of *Ascaris Lumbricoides* Worm Eggs in Faeces of Children aged 4-6 Years at Nurul Hasanah Walbarokah (NHW) Marelan Kindergarten. *Journal of Public Health and the Environment*, 3 (1), 1–7.

Tiara, M. (2019). identification of parasitic contamination in cayenne pepper (*Capsicum frutescens*) and green mustard (*Brassica juncea* L) in four main markets in Malang [University of Brawijaya]. <https://doi.org/10.31227/osf.io/n4f68>

WHO. (2017). *Guideline: preventive chemotherapy to control soil-transmitted helminths infections in at-risk population groups*. Geneva: World Health Organization; 2017. License: CC BY-NC-SA 3.0 IGO. In WHO Press.