

# Relationship of Water Quality in the Presence of Soil Transmitted Helminthes (STH) in Fresh Basil at Food Stalls in Sentani District 2016

Muhamad Abas<sup>1</sup>, Marlin M. Jarona<sup>2</sup>, Bruce Mehue<sup>3</sup>

<sup>1,2,3</sup>Environment Health School, Health Polytechnic of Jayapura, Papua Province, Indonesia

**Abstract:** *Introduction*, according to the World Health Organization (WHO), over 1.5 billion people or 24% of the world's population infected Soil Transmitted Helminthes. One way transmission of Soil Transmitted Helminthes is through the vegetables that are not washed or peeled, cooked perfectly. Food stalls that sell food at Sentani District developed very rapidly, almost on every street corner there are stalls selling various kinds of food, one of the most plentiful food is vegetables. *Purpose* of this research to calculate the percentage of food fresh basil contaminated Soil Transmitted helminthes in five food Stalls in Sentani District, to identify species of Soil Transmitted Helminthes in five food stalls in Sentani District, to know the quality of the water used to wash vegetables, Basil in food stalls in Sentani District, and to analyze the relationship of water quality in the presence of Soil Transmitted Helminthes in fresh basil in food stalls in Sentani District. Analytical research methods with cross sectional approach and know the relationships between variables. The study population was 30 food stalls in the District of Sentani. *Results* of the study are food vegetables Basil contaminated Soil Transmitted helminthes In food stalls in Sentani District 8 samples (26.7%), Soil Transmitted Helminthes species on food fresh basil in a five-foot stalls in the district Sentani is the egg *Ascaris lumbricoides* (roundworms, water used to wash vegetables, Basil in food stalls in Sentani District five feet as many as 17 people (56.7%) use water PAM of 30 food stalls or sample and there is no relationship water quality in the presence of Soil Transmitted Helminthes in fresh basil in a food stalls in Sentani District, because the results of statistical tests showed the value of the chi square 0.151 smaller than the value of the chi square 3.84 criticism, while the value of  $p$ : 0.697 more greater than 0.05. The *conclusion* is there is no relationship of water quality in the presence of Soil Transmitted Helminthes in fresh basil in a food stalls in Sentani District

**Keywords:** water, soil transmitted helminths, fresh basil, food stalls

## 1. Introduction

According to the World Health Organization (WHO), over 1.5 billion people or 24% of the world's population infected Soil Transmitted helminthes. These infections are widespread in the tropics or subtropics, with the greatest number occurring in sub-Saharan Africa, the Americas, China, and East Asia (WHO,2015). The prevalence of ascariasis in Indonesia in several counties and cities show the number above 20% in 2012, with the highest prevalence in a Regency reached 76.67%. (Dirjen PP & PL Kemenkes RI,2013)

The impact caused by an infection of worms include: affect infusion (intake), digestive (digestive), absorption (absorption) and metabolism of food. Cumulatively, the worm infection may cause the loss of nutrients in the form of calories and protein and blood loss. Moreover, it can hinder physical development, intelligence, and work productivity, as well as lowering the body's resistance so easily affected by other diseases (Health Minister RI 2006).

Worm infections are spread widely throughout the world. The spread of the worm Soil Transmitted helminthes and cases of infections due to egg worm Soil Transmitted helminthes more going in the tropics because the tropics have high rainfall and the appropriate climate for the development of this parasite. Soil Transmitted helminthes is one of zoonosis in the region whose inhabitants many consume vegetables and sanitary environment is still low levels, such as in Southeast Asia, India, South Africa, and Latin America (Karnadi Sik Asik, 2014).

The vegetables accompanying food is a staple food that is rich in nutrients. In the vegetables contained protein, vitamins and minerals. Vegetables in the fields of horticulture can be interpreted as part of the shoots, leaves, fruit and root crops that are tender and can be eaten in whole or in part in case of fresh or raw (vegetables) or cooked, as a complement to foods (Suriyani, 2012).

Vegetables are beneficial for health as it contains relatively high nutrients that the body needs, namely, vitamins and minerals. Almost all kinds of vitamins and micronutrients (especially minerals) are important for body found in fresh vegetables. Essential vitamins and minerals useful to keep the body's metabolism. In addition to vitamins and minerals, vegetables have high fiber content. Frequently used vegetables into vegetables in the stalls of canteen, include cucumber, basil, lettuce, string beans, cabbage and tomatoes (Suriyani, 2012).

Vegetables are generally consumed in the form of already cooked, but many are also consumed in raw form as fresh vegetables. Serving raw vegetables is relatively easy and doesn't require much time. Raw vegetables also have a distinctive taste that may not be matched by the vegetables Cook (Khomsan, A. 2002).

The food has a very important role in public health. All members of society without exception is the consumer of the food itself. The factors that determine the quality of the food is good, can be reviewed from several aspects, including aspects of deliciousness (taste and flavour), content of

nutrients in food and public health aspects. Interesting food, delicious and high in its nutrition value become meaningless at all if it is not safe for consumption. Because these foods act as intermediary or substrate for the growth of pathogenic microorganisms and other organisms cause disease (Purba dkk., 2012).

Basil or *Ocinum cannum* is a complementary dish vegetables, Basil's presence gives its own taste so much favored by consumers. Basil was always served in a raw state, so it does not cover the possibility of becoming a parasitic spreading responses of soil due to leaching processes are not perfect. According to the WORLD HEALTH ORGANIZATION, 2015, one way transmission of Soil Transmitted helminthes is through the vegetables that are not washed or peeled, cooked perfectly. The parasite eggs found in Basil when ingested can cause illness to the consumer.

Research ever undertaken by Vardhana, dkk on cabbage vegetables found that 26.19% contaminated by soil transmitted helminthes. Types of egg worm *Ascaris lumbricoides*, among others, were found (145.28%), *Trichuris trichiura* (7.14%) and 4.76% samples contaminated by these two kinds of parasites. The results of the research conducted by Erna w., entitled Relationship to water use in the presence of Soil Transmitted helminthes in Fresh Basil in a food Stalls in Boyolali district in the year 2012, from the results of the study showed no relationship between water used to wash fresh vegetables in the presence of Soil Transmitted helminthes, because value 44 p 0.05 from > stalls packed five feet

Food stalls that sell food at Sentani Dsatrik developed very rapidly, almost on every street corner there are stalls selling various kinds of food, one of the most plentiful food is vegetables. The rapid growth of the food industry is influenced by the growing needs of the community against fast food, while according to the results of interviews to some of those traders had never carried out the examination of the food sold by relevant agencies, so that when the quality of the food is sold is not overseen by related parties, then it is feared could cause health issues for the community. With respect to the situation, then the researchers feel the need to do research, entitled "relationship of water quality in the presence of Soil Transmitted helminthes in Fresh Basil In Sentani District five feet the year 2016"

## 2. Purpose of Study

Relationship of water quality in the presence of Soil Transmitted Helminths in fresh basil in a food stalls Sentani District the year 2016

## 3. Method of Research

The study is the research of analytic approach of cross sectional, to know the relationships between variables. This research was conducted in the District of Jayapura, Sentani Regency, while the identification of the existence and type of Soil Transmitted helminthes were conducted in the laboratory of Health Polytechnic Kemenkes Jayapura, whereas

conducting Control in the Laboratory of Cenderawasih University. The research was conducted in July to August of the year 2016. The population in this research is the whole food stalls selling vegetables menu using Basil in Sentani Regency Jayapura District 30 stalls of vegetables. The sample technique is total population.

## 4. Result and Discussion

### a) Characteristics of respondents

Respondents in this research are the merchant stalls selling five feet in Sentani District who sells vegetables, whereas samples taken are vegetable Basil.

#### 1) Characteristic respondents based on age

**Table 1:** Characteristic respondents based on age of Food stalls in Sentani Districk 2016

Nu	Age	F	%
1	< 20 Tahun	2	6,7
2	20-30 years	13	14,3
3	40-50years	13	14,3
4	More than 50 years	2	6,7
Total		30	100

Source: Primary Data, 2016

Based on table 1 shows that the respondents based on age groups of merchant stalls selling vegetables, five feet on 20-30 most of the year and 40-50 the year i.e. as many as 13 people (14.3%).

#### 2) Characteristic respondents based on the education.

**Table 2:** Characteristic respondents based on the education

Nu	Level education	F	%
1	Junior school	5	16,7
2	High school	17	56,7
3	Diploma/bachelor	8	26,7
Total		30	100

Source: Primary Data, 2016

Based on table 2 shows the respondent based on the educational level of merchant stalls selling vegetables in five feet of most is the level of education HIGH SCHOOL (high school) that as many as 17 people (56.7%)

#### 3) Characteristic respondents based on length as food staller

**Table 3:** Length of food staller

Nu	Water resources	F	%
1	Lower than 1 year	5	16,7
2	1-5 years	16	53,3
3	6-10 years	9	30,0
Total		30	100

Source: Primary Data, 2016

Based on table 3 shows the respondents based on old sale look that most traders food stalls selling vegetables, five feet is already selling for 1-5 years (53.3%)

4) Water resources which is used of food staller

**Table 4:** Water resources which is used of food staller

Nu	Length	F	%
1	Well bore	13	43,3
2	PDAM (drinking water company)	17	56,7
Total		30	100

Source: Primary Data, 2016

Based on Table 4 shows the Respondent Merchant stalls selling vegetables, five feet, to see that most respondents use PAM water (drinking water Company) that as many as 17 people (56.7%).

5) Research Variable.

a) Identification Of Intestinal Nematodes In Basil Vegetable.

**Table 5:** Intestines Nematodes in Basil Vegetables

Nu	Result	F	%
1	Positive (with nematodes larvae)	8	26,7
2	Negative (without nematodes larvae)	22	73,3
Total		30	100

Source: Primary Data, 2016

Based on table 5 looks that most of the samples of the vegetable Basil examined contain intestinal nematode eggs, that is as much as 8 samples (26.7%). And from the results of laboratory examination found that the species of worm that pollute the *Ascaris lumbricoides* is a species of entirely

b) Cross-table to find the relationship between the water source digunakan Respondents to wash vegetable Basil in the presence of Intestinal Nematodes in Vegetable Basil Samples

**Table 6:** Relationship between the water source digunakan Respondents to wash vegetable Basil in the presence of Intestinal Nematodes in Vegetable Basil Samples

Nematodes intestines	Water resources					
	Well bore		PDAM		%	
	f	%	f	%	f	%
Positif	3	10	5	16,7	8	26,6
Negatif	10	33,3	12	40	22	73,3
Jumlah	13	40,3	17	56,7	30	100
$X^2 = 0,151$		p value = 0,697		Ho = accepted		

Source: Primary Data, 2016

Based on the table. 6 indicates that the source of the water used to wash the vegetable Basil respondents positively contain eggs of intestinal nematodes in basil vegetables, namely vegetable samples PDAM as much as 5 respondents (16.7%), while using the well bore is as much as 3 of the respondents (10 %). Statistical tests showed the value of the chi square 0.151 smaller than the value of the chi square 3.84 criticism, while the value of p: 0.697 greater than 0.05, which means that there is no relationship between the quality of the water used merchant stalls packed pavement at Sentani District with in the presence of worm eggs Soil Transmitted helminthes (STH) in vegetable Basil.

c) Cross-table to find the relationship between the way of vegetable washed by Respondents in the presence of Intestinal Nematodes in Vegetable Basil Samples

**Table 7:** The relationship between the ways of vegetable washed by Respondents in the presence of Intestinal Nematodes in Vegetable Basil Samples

Nematodes intestines	Washed technique					
	Drowning		In flew water		%	
	f	%	f	%	f	%
Positif	6	20,0	2	6,7	8	26,6
Negatif	14	46,7	8	26,7	22	73,3
Jumlah	13	60,7	10	33,4	30	100
$X^2 = 0,151$		p value = 0,697		Ho = accepted		

Source: Primary Data, 2016

Based on the table. 7 showed that way wash vegetable Basil by positive respondents containing eggs of intestinal nematodes , namely vegetable samples by way of drowning as much as 6 (20.0%) samples, whereas with the way water flows is as much as 2 sample (6.7%). Statistical tests showed the value of the chi square 13.341 greater than the value of the chi square 3.84 criticism, while the value of p: 0.033 smaller than 0.05, which means that there is a connection between how to wash vegetables Basil by traders food stalls selling vegetables in Sentani district in the presence of worm eggs Soil Transmitted Helminthes (STH) vegetable Basil.

## 5. Discussion

A proliferation of food stalls in Sentani District prove the existence of economic improvement, but from the side of the health food outside cannot be guaranteed, because the results of an examination of the myriad food stalls that sold food stalls mainly many are not eligible. Food sold at food stalls especially at night in the District of Sentani is food, raw vegetables, namely vegetable basil, cabbage and cucumber.

The results of the study conducted by the researchers at a vegetable Basil and cabbage worm eggs impurities prove Soil Transmitted Helminthes (STH). In this research note number of egg contamination Soil Transmitted Helminthes (STH) on fresh cabbage of 26.19%. This can be caused by several factors that allow the worms eggs are still lags on fresh vegetables used as vegetables.

The results of the research on vegetable Basil that food fresh vegetables that are sold at stalls eating pavement at Sentani District prove impurities Soil Transmitted Helminthes worm eggs (STH) as much as much as 8 samples (26.7%) of the 30 samples. While the relationship between the quality of the water used to wash the vegetables showed no relationship because the results of statistical tests showed the value of the chi square 0.151 smaller than the value of the chi square 3.84 criticism, while the value of p: 0.697 is greater than 0.05, which means that there is no relationship between the quality of the water used merchant stalls selling vegetables, five feet used to wash vegetable Basil in Sentani Regency Jayapura District.

Contamination of worm eggs in food vegetable Basil caused by some other factor between the contamination of the eggs

of worms on this Basil vegetables can be influenced by place or where a vegetable Basil stems, storage process basil, leaching process Basil, and Basil as the rendering process vegetables. One of the things that may affect egg contamination Soil Transmitted Helminthes (STH) in fresh basil in this research is the place or origin of Basil used traders as fresh vegetables. Based on information obtained from the owner of a vegetable stall, Basil purchased from some of the traditional market in the District of Sentani as the old market, and new markets. According to research done Almi in 2011, Basil vegetables sold in traditional markets of the city of Bandar Lampung has the egg contamination Soil Transmitted Helminthes (STH) high enough IE amounting to 72.7% (Almi, 2011).

The number of egg contamination Soil Transmitted Helminthes (STH) on vegetables Basil in the traditional market town of Bandar Lampung is still above 20%. Based on the research of Almi year 2011, out of 44 samples of vegetables Basil the traditional market town of Bandar Lampung were examined, 32 samples (72.7%) vegetable Basil eggs contaminated Soil Transmitted Helminthes (STH). The market of the Middle Market, Koga, Market Way Halim, and market traditional markets including Gintung contaminated Soil Transmitted Helminthes eggs (STH) (Almi, 2011).

The egg contamination Soil Transmitted Helminthes (STH) in fresh basil can also be affected by the process of storing Basil is treated before being used as vegetables in the stalls packed five in Sentani District there are stored in cabinets cooling and some are not. Merchants who do not store vegetables in the refrigerator usually only put the vegetables in the kitchen or in the vegetable basket unknown clean. When the vegetables are not clean and moisturized, allows for eggs Soil Transmitted Helminthes (STH) to survive and develop into the infective form. In addition, cross-contamination can occur; either from the eggs is left in the storage areas as well as from the rest of the vegetables to the other vegetables.

The egg contamination Soil Transmitted Helminthes (STH) can also occur in a Basil vegetables stored in the refrigerator. Storing vegetables in 92 of the refrigerator can maintain the freshness of the vegetables, but keep in mind that the cooling in the refrigerator cannot remove or damage the worm eggs. *Ascaris lumbricoides* eggs can survive at a temperature of less than 8 ° C even at this temperature can damage egg *Trichuris trichiura* (Siskawahy, 2010). Besides cross-contamination can also occur on the refrigerator. Cross-contamination can occur when fresh vegetables mixed with other vegetables that could potentially contain egg Soil Transmitted Helminthes (STH) (Muyassaroh, 2012).

The results of the research done on street vendors selling vegetables Basil in Sentani District about how to wash vegetables Basil that is how cooling down as much as 6.7 (20.0%) samples, whereas with the way water flows is as much as 2 sample (6.7%). While the relationship between the way of washing in the presence of worm eggs Soil Transmitted Helminthes (STH) there is a connection because of the test result statistics show the value of the chi square

13.341 greater than the value of the chi square 3.84 criticism, while the value of p: 0.033 smaller of 0.05, which means that there is a connection between how to wash vegetables with Basil the existence of egg worm Soil Transmitted Helminthes (STH) used the merchant stalls selling vegetables in five feet in Sentani Regency Jayapura District.

Other factors that greatly affect the egg contamination Soil Transmitted Helminthes (STH) in fresh basil is the process of washing vegetables. Vegetable Basil leaf surfaces have a rough worm egg thereby allowing settled. When washing the vegetables, egg worm is likely still attached to the vegetable and ingested when vegetables are consumed (CDC, 2013).

How to wash vegetables and wash technique are things to note before the vegetables are served as fresh vegetables. Wash with soak in a container such as a sink and pot, dirt or worm eggs that had been detached can be glued back on the Greens. Vegetable washing with running water will make a vegetable to be clean, because the water that comes to the vegetable in the condition will bring the dirt, dust, germs, parasites etc to the wastewater that has been detached and washed water (Suryani, 2013).

The egg contamination Soil Transmitted Helminthes (STH) in vegetables can also be influenced by how a serving of vegetables. In this study, all of the stalls who checked serves fresh basil without using gloves or tongs tool food. So the merchant directly using the hand to present fresh vegetables above the plate or container vegetables. The way the presentation directly, allowing the onset of transmissi eggs of worms from the hands of merchants to raw vegetables used as vegetables. Transmission of the egg worm can occur through the hands or nails containing worm eggs then went into the mouth through food (Mardiana, 2008)

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## Author Profile

**Muhamad Abas** received the B.S. and Master of Public Health from Airlangga University Surabaya, East Java, Indonesia. He is working now as teacher in Health Polytechnic of Jayapura, Papua, Indonesia.