

THE ACTIVITIES OF ANTHELMINTIC INFUSA OF PAPAYA SEEDS (*CARICA PAPAYA* L.) AGAINST WORMS *ASCARIS SUUM* (STUDY IN VITRO)

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ABSTRACT

Ascariasis is a disease caused by a worm *Ascaris sp.* The prevalence of intestinal worms in Indonesia is still very high, especially on the inhabitants of that less capable with sanitation worse. The side effects synthetic anthelmintic quite a lot. One of the plants that can be used as an anthelmintic is papaya seeds. The purpose of this research is to know the influence of infusa papaya seeds (*Carica papaya*) against the death of worms *Ascaris suum* with sharing the right dose and raise the potential of fruit seeds papayas (*Carica papaya*) as anthelmintic herbal medicine. This research is experimental research laboratories with research design post test only control group design. The sample is a worm *Ascaris suum* obtained from the agriculture office of Agriculture and fisheries City of Surakarta. This research uses 9 treatment groups namely NaCl 0.9 % as negative control and pirantel pamoat 0.2%, 0.3%, 0.4%, 0.5 percent as a positive control as well as the bean infusa papaya with the concentration of 10%, 20%, 30% and 40% as treatment groups. The Data obtained was analysis by One way ANOVA test. From this research it can be concluded that the infusa of papayas (*Carica papaya*) seed have anthelmintic power against *Ascaris suum* in vitro.

Keywords : Ascariasis, *Ascaris suum*, seeds papayas, *Carica papaya*

No: of Tables: 3

No: of References: 10

Introduction

Ascariasis is a disease caused by a worm *Ascaris sp.* (1) According to the World Health Organization, more than 1.5 million people, or 24 percent of the population of the world, infected by conducting soil' helminth. (2) Estimated 807 - 1221 million people in the world infected with *Ascaris lumbricoides* worm. (3) Around 270 million pre-school age children and 600 million school age children living in the place of transmission of *Ascaris worms*, and in need of treatment and preventive intervention. (2)

In Indonesia, the prevalence of worms is still very high, especially on the inhabitants of that less capable with sanitation worse. Average recorded the prevalence of worms of 31.8% on examination results data defecation by Sub Directorate diarrhea, intestinal worms and other digestive tract infections in 2002 - 2009 in 398 primary schools (SD) / Madrasah Ibtidaiyah (MI) spread in 33 provinces. (4)

Anti-hermitic is drug which can kill parasitic worms in the intestines. (5) Drug of choice for intestinal worms is currently pirantel pamoat, albendazol, and mebendazol. (6)

Papayas can be used as an anthelmintic. (7) Papayas that have been dried beans used as elixir with honey shows a significant effect on the parasite in human intestines without significant side effects. (8) Benzylisothiocynate, in the seeds of the papaya was alleged as anthelmintic activity. The womb latex in the papaya also has anthelmintic effects on natural worms *Ascarissuum* infection in pigs. (8) Papaya plants are to

be found in Indonesia. The Total production of fruit plants based on the results of the collection and processing of statistical data of Agriculture Horticulture (SPH) year 2014 was 19.805.977 tons. Papaya is ranked seventh from the national fruit production of 4.24%. (9). The purpose of this research is to know the influence of infusa of papaya seeds (*Carica papaya*) against *Ascaris suum*.

Research Method

Research Design

The design of the research that is used is experimental *post test only al. group design* to test the activity of anthelmintic infuse papaya seeds of worms *Ascaris suum* with each concentration of 10% 20% 30% 40%. The concentration interval is determined based on the previous research.

Research Samples

The sample in this research is a worm adult *Ascarissuum* obtained from the agriculture office of Agriculture and Fisheries City of Surakarta.

The Place and Time of Research

The study was conducted in a laboratory of pharmacological Universities Muhammadiyah Surakarta on March-June 2017.

How to Work

The making of the infusion seeds papayas

The fruit of the papayas that have obtained collected, peeled and taken part stoned after it washed clean and dried under indirect - avoid discoloring

without direct sunlight, then dried samples using oven temperature at 45°C for 2x24 hours, then smoothed using the blender. The making of the infusion seeds papayas done with weighed as much as 10 gram powder papaya seeds and then inserted into the inner pot infuse, added aqua dest 100ml. sample was heated for fifteen minutes the at 90°C, while occasionally stirred.

The preparation of experimental animals

The test animals used is 126 of *Ascaris Suum* that obtained from the intestines of pigs infected with the virus. Worms is plugged into the thermos jug washed and flushed repeatedly until the clean with physiological NaCl solution. After that, test animals were divided into 3 groups experiments:

Group 1: given 100 ml infusion seeds papayas with the concentration of 10%, 20%, 30% and 40%.

The Group 2: given 100 ml positive control solution with the concentration of citrate piperazin 0.2%, 0.3%, 0.4% and 0.5%.

Group 3: given 100 ml negative control solution NaCl 0.9%.

Giving the treatment

Test animals given preferential treatment in accordance with the group. The treatment repeated 3 times and

contains 6 *Ascarissuum*. Research procedures implemented as follows:

Glass works prepared, each contains 100 ml infuse papaya seeds according to the concentration, 100 ml solution pirate payout according the concentration and 100 ml solution NaCl 0.9%. In each glass works included 6 tail worms *Ascarissuum*. To make sure whether worms die, paralysis, or still normal, these worms are touched with barcode stirrer. If worms live, moved into the hot water with a temperature 50°C, when in this way the worms remain silent, so worms are declared dead. The results obtained were numbered every hour. Limitations of the dead in the experiment were when the worms die (not move when inserted into the hot water with a temperature of 50°C).

Data Analysis

Data were analyzed by one way anova (analysis of variant).

The results and Discussion

Mortality worm's rings pig in 9 treatment groups during 72 hours and 3 times the repetition is calculated and then analyzed using the software SPSS 24. The number of samples used in this research is less than 50 then normalitas test the spread of the data using Saphiro-Wilk test. Test results Saphiro-Wilk there on the table 1.

| | kelo | Kolmogorov-Smirnov ^b | | | Shapiro-Wilk | | |
|------|------|---------------------------------|----|------|--------------|----|------|
| | | Statistic | df | Sig. | Statistic | df | Sig. |
| jmlh | 20% | .385 | 3 | . | .750 | 3 | .000 |
| | 0.3% | .385 | 3 | . | .750 | 3 | .000 |
| | 0.4% | .385 | 3 | . | .750 | 3 | .000 |
| | 0.5% | .385 | 3 | . | .750 | 3 | .000 |

a. jmlh is constant when kelo = k-. It has been omitted.
 b. Lilliefors Significance Correction
 c. jmlh is constant when kelo = 40%. It has been omitted.
 d. jmlh is constant when kelo = 60%. It has been omitted.
 e. jmlh is constant when kelo = 80%. It has been omitted.
 f. jmlh is constant when kelo = 0.2%. It has been omitted.

Table 1.

Because of the spread of the normal data ($p > 0.05$), review comparison

using a one-way ANOVA test. One way ANOVA test results can be seen in table 2.

Oneway

| jmlh | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 39.333 | 8 | 4.917 | 13.275 | .000 |
| Within Groups | 6.667 | 18 | .370 | | |
| Total | 46.000 | 26 | | | |

Table 2.

One way ANOVA test results show that there is a significant difference in each group in the cause of the death of *Ascaris suum* ($p < 0.05$). So that statistical

analysis continued to know the difference between groups with test Post-Hoc. A summary of the test results Post-Hoc shown in table 3.

| The group | K(+) ¹ | K(+) ² | K(+) ³ | K(+) ⁴ | KP 1 | KP 2 | KP 3 | KP 4 |
|-------------------|-------------------|-------------------|-------------------|-------------------|--------|--------|--------|--------|
| K(-) | 0.000* | 0.000* | 0.000* | 0.000* | 0.000* | 0.000* | 0.000* | 0.000* |
| K(+) ¹ | | 0.511 | 0.196 | 0.511 | 0.196 | 1000 | 1000 | 1000 |
| K(+) ² | | | 0.511 | 1000 | 0.511 | 0.511 | 0.511 | 0.511 |
| K(+) ³ | | | | 0.511 | 1000 | 0.196 | 0.196 | 0.196 |
| K(+) ⁴ | | | | | 0.511 | 0.511 | 0.511 | 0.511 |
| KP 1 | | | | | | 0.196 | 0.196 | 0.196 |
| KP 2 | | | | | | | 1000 | 1000 |
| KP 3 | | | | | | | | 1000 |

Table 3.

K(-) : Negative groups namely *Ascaris suum* in NaCl solution 0.9%.
 K(+)¹ : Positive groups namely *Ascaris suum* in pirantel solution pamoat 0.2%
 K(+)² : Positive groups namely *Ascaris suum* in pirantel solution pamoat 0.3%
 K(+)³ : Positive groups namely *Ascaris suum* in pirantel solution pamoat 0.4%
 K(+)⁴ : Positive groups namely *Ascaris suum* in pirantel solution pamoat 0.5%

KP 1 : Treatment groups namely *Ascaris suum* in infusa seeds papayas 20%
 KP 2 : Treatment groups namely *Ascaris suum* in infusa seeds papayas 40%
 KP 3 : Treatment groups namely *Ascaris suum* in infusa seeds papayas 60%
 KP 4 : Treatment groups namely *Ascaris suum* in infusa seeds papayas 80%
 * : Differ significantly ($p < 0.05$) on Post-Hoc test

Based on the test indicates that the infuse of papayas seed at concentration of 20%, 40%, 60%, and 80% can cause the death of worms *Ascarissuum* significantly when compared with the negative control groups ($p < 0.05$).

The Infuse of papaya's seed at concentration of 20%, 40%, 60%, and 80 % also has anthelmintic activity which is equivalent with pirantel pamoat 0.2%; 0.3%; 0.4%; and 0.5% ($p > 0.05$).

Conclusion

The Infusa of papaya (*Carica papaya* L.) Seed has anthelmintic effect against *Ascaris suum* in vitro.

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