

## Effect of Addition of Betel Leaf Decoction on Survival Rate of Goldfish Infected with *Dactylogyrus* sp.

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### Abstract

This study aims to determine the effect of adding boiled betel leaf (*Piper bettle* Linn) with different doses on the survival rate of goldfish (*Cyprinus carpio*) infected with *Dactylogyrus* sp. This research was conducted at the Laboratory of the Fish Quarantine Station, Quality Control and Safety of Class I Fishery Products, Gorontalo. This study used an experimental method with a completely randomized design (CRD), 4 treatments and 3 replications. The test method is by soaking the betel leaf stew for 30 minutes. With dosage. Treatment A (control), B (5 ml / L water), C (10 ml / L water), D (15 ml / L water). Observations include the survival of goldfish. Treatment A (86.7%), B (100%), C (93.3%), and D (86.7%), parasite intensity and density of *Dactylogyrus* sp., observation of clinical symptoms and water quality. The data analysis used was the Analysis of Variance (ANOVA). The results showed that the treatment of giving betel leaf stew with different doses on the survival of goldfish infected with the parasite *Dactylogyrus* sp had no significant effect among treatments. Water quality parameters during the study were still in normal conditions for the life of goldfish seeds.

**Keywords:** Goldfish; betel leaf; survival rate; *Dactylogyrus* sp.

### I. Introduction

Goldfish (*Cyprinus carpio*) is a freshwater fish widely cultivated in Indonesia. In the cultivation process, the problem that is often faced is the death of fish due to disease (Khairuman et al., 2008). The disease that often attacks goldfish is a disease caused by the parasite *Dactylogyrus* sp. which generally can be overcome with antibiotics treatments.

Although rare in well maintained ponds, disease and parasite outbreaks that attack fish can cause huge losses to fish farmers because they often cause mass fish mortality. The disease-causing organisms that commonly attack fish generally come from the fungi, bacteria, viruses, parasites and other invertebrates (Anonymous, 2017).

The success of a fish farming business cannot be separated from the problem of fish diseases and parasites. Betel leaf (*Piper battle* Linn) is an

alternative medicinal plant that has been widely used by the public. The results of the study (Research Institute for Spices and Medicines, 2012), found that betel leaf contains phytochemical compounds, including: alkaloids, saponins, tannins and flavonoids as active compounds. Juliantina (2009) and Wardani (2011) reported that betel leaf extract functions as gram-positive and gram-negative antibacterial.

Betel leaf contains phenols, which have a role as poison for microbes by inhibiting their enzyme activity. Catechols, pyrogallols, quinones, eugenols, flavones and flavonoids are included in the phenol group and have the ability of some antimicrobial ingredients (Suliantri et al., 2008), while according to Mursito (2002) saponins and tannins in betel leaf act as antiseptics for surface wounds. Bacteriostatic which is usually used for infections of the skin, mucosa and against infection in wounds and flavonoids besides functioning as bacteriostatic also

functions as anti-inflammatory. In Zalizar's (2009) study, betel leaf extract and betel leaf ointment were proven to reduce the number of *Staphylococcus aureus* and *Escherichia coli* bacteria.

## II. Research Methods

This research was carried out at the Fish Quarantine Station, Quality Control and Safety Class 1 Fishery Products, Gorontalo City.

The preparations including the tools and materials used for the process of boiling the betel leaf. Before using the tools in the betel leaf boiling process, the tools and the ingredients to be wash. Betel leaf (fresh) first is weighed as much as 100 grams. Then the betel leaf is cut small to get the maximum boiled water. Then pour 1 liter of water into the boiling pan, and betel leaves with the number of betel leaves according to the predetermined dose. After the ingredients are boiled over medium heat until it lasts approximately 500 ml of cooking water. After the betel leaf boiled then filtered and accommodated in a basin until it cools down.

Procedure for disease isolation is carried out as follows: (1) Isolate the disease by picking up the gills of a carp that is attacked by the disease. (2) Goldfish gills were analyzed to determine the type of parasite.

The goldfish to be used must first be acclimatized for 5 days with 100 fish in separate containers from the rearing containers after the immersion period, during the adaptation the fish are fed commercial pellets with ad libitum feeding frequency (morning and evening). Fish that will be used in this study are goldfish infected with a disease caused by *Dactylogylos* sp. Before the research was carried out, the test fish container (rearing container) was prepared, consisting of 12 containers measuring 30 x 20 x 20 cm. Each container is equipped with a hose and an aeration stone that has been filled with water and prepares a separate container with a maintenance vessel for the immersion process consisting of 3 containers according to the dosage treatment (ml / l of water) of 15 immersion tank fish.

After that, the goldfish infected with *Dactylogylos* sp was soaked with a decoction of betel leaf with a predetermined dose. The fish is soaked for 30 minutes with the betel leaf stew. After the soaking period is complete, the fish are transferred to the rearing container without adding the betel leaf stew.

## III. Results and Discussion

### 3.1 Parasite identification

The identification of parasites carried out in this study was in several stages, namely taking 10 fish as samples at the cultivation location in the Kabila District, then performing the initial identification stage to see if there were *Dactylogylos* sp parasites that attacked goldfish.

### 3.2 Survival rate of *Cyprinus carpio* after soaking

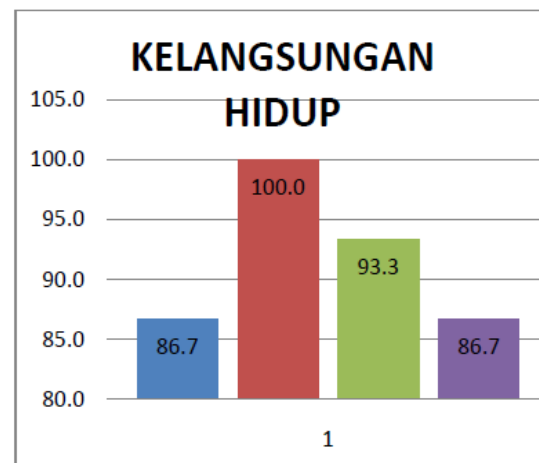


Figure 1. Survival rate of *Cyprinus carpio*

The results of soaking using betel leaf stew with different doses and the length of soaking that has been determined, namely (30 minutes) shows that treatment B (5 ml / L of water) provides a survival rate of 100%. Whereas in treatment A (Control) and in treatment D (15 ml / L water) gave the same survival rate, namely 86.7% and in treatment C (10 ml / L water) with a survival rate of 93.3%.

### 3.3 Intensity and prevalency of *Dactylogyrus* sp.

Intensity is the number of parasites present in an individual/organism. Intensity calculation aims to determine the number of parasites after immersion and prevalency is the number of parasites that infect the fish.

**Table 1.** Intensity of *Dactylogyrus* sp. on *Cyprinus carpio*

Ulangan	Perlakuan			
	A	B	C	D
1	10	1	4.2	0
2	4	3.6	0	2.2
3	2.4	4	8	4
<b>Jumlah</b>	<b>16.4</b>	<b>8,6</b>	<b>12,2</b>	<b>6,2</b>
<b>Rata-Rata</b>	<b>5.47</b>	<b>2,87</b>	<b>4,07</b>	<b>2,07</b>

The intensity of each treatment resulted in different presentations during the study, namely treatment A (control) had the highest intensity value, namely 5.47 ind / head and treatment D (15 ml / L water) had the highest intensity value. the lowest was 2.07 ind / head, C treatment (10 ml / L water) 4.07 ind / head, and treatment B (5 ml / L water) 2.87 ind / head. From each treatment the intensity value has decreased in number, but from the treatment given betel leaf stew with different doses still has a high amount of intensity, this is presumably because the dose of betel leaf stew given still has not affected the number or presence of parasites *Dactylogyrus* Sp. , or not even lethal parasites.

**Table 2.** Prevalency of *Dactylogyrus* sp. on *Cyprinus carpio*

Ulangan	Perlakuan			
	A	B	C	D
1	100	20	100	0
2	100	100	0	100
3	80	40	100	100
<b>Jumlah</b>	<b>280</b>	<b>160</b>	<b>200</b>	<b>200</b>
<b>Rata-Rata</b>	<b>93,3</b>	<b>53,3</b>	<b>66,7</b>	<b>66,7</b>

The prevalence in each treatment resulted in a different presentation during the study, namely treatment A (control) had the highest probability value, namely 93.3% and treatment B (5 ml / L water) had the lowest potential value. 53.3%, treatment C (10 ml / L water) 66.7%, and treatment D (15 ml / L water) had a potential value of 66.7%. From each treatment, the prevalence value has decreased in number, but from the treatment given betel leaf stew with different doses still has a high level of prevalence, this is presumably because the dose of betel leaf stew given has not affected the number or presence of parasites *Dactylogyrus* sp., or not even lethal parasites.

### 3.4 Water qualities

The results of water quality measurements during the maintenance of goldfish seeds were still in a good range for the life of carp fry. Measurements taken are temperature, pH and DO measurements. The DO parameter is only measured at the beginning and end during the maintenance process after immersion.

The results of water quality measurements show that the temperature during the study for all of the above treatments is still within the normal range for life or treatment of goldfish, which is around 26.69 0C. The pH range during the study using betel leaf stew

on goldfish seeds for all treatments was 7.10, while the pH range after soaking remained the same at the time of immersion.

The range of dissolved oxygen in the research process during the maintenance period after soaking using betel leaf stew in goldfish seeds ranged from 7.86 to 7.90 mg/l.

#### IV. Conclusion and Suggestion

Giving boiled betel leaf (*Piper betle Linn*) to goldfish (*Cyprinus carpio*) has no effect on the survival of the carp seeds infected with the parasite *Dactylogyrus* sp.

The highest survival was obtained in treatment B (5 ml / L water) which was 100.0% and in treatment

A (control) had the highest intensity, namely 5.47 individuals / head and low survival, namely 86.7%, and in treatment D (15 ml / L water) had the lowest intensity value, namely 2.07 ind / head and survival of 86.7%, treatment C (10 ml / L water) survival was 93.3% and intensity 4, 07 ind / head, while the highest and lowest pravelensi values were obtained in treatment A (control) with a value of 93.3% and treatment C (10 ml / L water) and D (15 ml / L water) of 66.7% and at treatment B (5 ml / L water) 53.3

It is necessary to conduct research first to assess the effective dosage for soaking using betel leaf stew against goldfish infected with the parasite *Dactylogyrus* sp, and further research is needed by adding doses or by extracting it.

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