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Effect of Marine Water to Ward *Betta Sp*. Survival

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Abstract. Betta fish (*Betta* sp.) Is a many fish which is traded as an ornamental fish at a price that is quite affordable in Indonesia. Habitat that is often found in betta fish is freshwater such as shallow waters, rice fields or tributaries. This study aimed to determine the effect of marine water giving on the survival rate of betta fish (Betta sp.). This research conducted at the Biology Laboratory of UIN Sunan Kalijaga, Yogyakarta in October 2019 with experimental research methods. The design used is RAL (Rancangan Acak Lengkap) with 5 treatments. The dose used is treatment with a dose of treatment A 0%, treatment B 25%, treatment C 50%, treatment D 75%, and treatment E 100% with maintenance for 6 days. Measured variables include life span, behavior (ethology), and water quality. The results showed that the life span of betta fish treatment A can live for 144 hours (still alive), treatment B can live for 144 hours (still alive), C treatment 8 hours 21 minutes, treatment D 2 hours 20 minutes, and treatment E 50 minutes. The observations of the treatment behavior A was calm, treatment B was active, treatment C was active, treatment D was aggressive, and treatment E was aggressive. Water quality used in the study is in the temperature range of 29o C-30o C and pH 6-8. The conclusion of this study is betta fish can survive at 25% marine water dose, while 50% -100% (absolute) treatment cannot survive, due to several factors.

Keywords: Betta fish (Betta sp.), Survival, behavior.

INTRODUCTION

Betta fish (Betta sp.) Is an ornamental fish that live in fresh water which is often traded with varying price and is quite affordable. Betta fish habitat is spread in the Southeast Asian region such as Indonesia, Thailand, Brune Darussalam, Malaysia, Singapore and Vietnam. (Han, 2019). In general, Betta fish have a body that varies from flat to cylindrical with rough scales. The base of the tail is wide so that his body looks sturdy and strong, and consists of a pectoral fins (gill fins), dorsal fins (dorsal fins), ventral fins (pelvic fins), caudal fins (tail fins), and the anal fins (Admadjaja, 2009). Habitat that is often in habita by betta fish is freshwater such as lakes, rivers with slow currents or swamps. Betta fish are very fond of place that are overgrown with aquatic plants, which is useful for themselves to protect from fish-eating birds (Axelord & Schultz, 1990). In general, a betta fish can to survive and reproduce well at temperatures of 24 ºC - 30°C with a pH range of 6.5 - 7.5 (Admadjaja, 2009). The level of dissolved mineral content in the water or hardness ranges from 8.5 to 10 dH. (Linke, 1994; Sanford, 1995). This study aimed to determine the effect of marine water giving on the survival rate of betta fish (*Betta* sp.).

MATERIALS AND METHODS

This study used material betta fish, marine water and freshwater. As for the tools used include bottles, beakers, pH paper, and thermometer. The method used in this study used an experimental with Rancangan Acak Lengkap (RAL), which consists of five (5) treatments. The method used is the search for betta fish seeds with the same size and type. Then measure the volume of 300 ml, by calculating of the percentage of marine water: *Percentage Σ water = Vol marine water x 100%.* So that the dose to be used in treatment A is 0%, treatment B 25% (75 ml) of marine water, treatment C 50% (150 ml) of marine water, treatment D 75% (225 ml) of marine water and treatment E 100% (300 ml) of marine water. Then the measurement of pH value and temperature of the water and salt levels (salinity). For salinity value 1 liter of marine water there are 35 grams of salt dissolved therein, whereas in this study using a total volume of 300 ml of marine water, so that in 300 ml of marine water contains 10.5 grams of salt content. The initial calculation is by finding the chlorinity value by the formula:

Vol. total chlorinity = salinity x vol. marine water

Chlorinity value obtained from the formula for calculating the salinity:

Salinity = chlorinity x 1.0817 (Arief, 1984).

After that Betta fish was entered to the media with a maintenance treatment for 6 days.

RESULTS AND DISCUSSION

Based on these experiments the results obtained;

Betta fish behavior Treatment Early End
Betta A Calm Calm, Betta B Active Active, Betta C silent Aggressive, Betta D silent Aggressive, Betta E Aggressive Aggressive. Based on the observations table

above, behavior of betta A was initially put into the medium, which is calm (not moving a lot) with swimming position in the water surface area until the end of the observation. At the time Betta B when first was entered into the medium, the behavior showen is active and often swim to the bottom of water. At the time Betta C first was entered into the medium, the behavior showen is silent (swimming at the surface), then betta fish behaves aggressively when will die. At the time Betta D firts was entered into the medium, the behavior showen is silent (swimming on the surface), rarely moving, after than betta fish behave aggressively when will die. At the time Betta E first was entered into medium, behavior showen is aggresive (swimming irregularly, jumping around) until it will die.

Betta fish life span

Based on the observation chart long time. Betta fish survival obtained of data as above, namely betta A can survive for 8640 minutes or as long as 144 hours (to survive until the end of the observation). Betta B can survive for 8640 minutes or as long as 144 hours (to survive until the end of the observation). Betta C can survive for 501 minutes or as long as 8 hours 21 minutes. Betta D can survive for 140 minutes or 2 hours 20 minutes. At Betta fish E can survive for 50 minutes. Salinity is the concentration of all saline solution obtained in marine water. Salinity value in freshwater usually less than 0.5 ppt and for marine waters reaches 30-40 ppt. Water salinity influence osmotic pressure of the water. The greater salinity, higher osmotic the pressure. (Kordi. 2009). In the study level of salinity study in betta A is below 0.5 ppt, whereas for the betta B 4.8 ppt, the betta C is 9.6 ppt, the betta D is 14.3 ppt, and the betta fish E that is 19 ppt. From these results it can be indicate that the greater the level of salinity.

Betta fish the higher osmotic the pressure which resulted in the death of betta fish, starting in the fish with the highest salinity values namely betta fish E, than betta fish D, and finally Betta fish C. Betta fish B does not experience death because Betta fish B can adapt to an eviroment that is less conducive with the help of a Betta fish tool that is the labyrinth. With the use of the labyrinth of betta fish can support the viability of the environment salinity that low oxygen content, labyrinth has the function of storing oxygen in sufficient quatities in enviroments that has a low oxygen content, this is evidenced by the survival of betta B until the end of the study.

CONCLUSION

Based on the results of this study concluded that the salinity of the water can affect the life span of betta fish, where in A betta fish has no salinity (freshwater) so as to keep alive, whereas for betta fish seawater B at a dose of 25% (4.8 ppt salinity) cause a betta fish is still alive, for betta fish C at a dose of 50% (9.6 ppt salinity) causes the betta fish die within a period of 8 hours 21 minutes, for a betta fish D at a dose of 75% (14.3 ppt salinity) cause betta fish die within a period of 2 hours and 20 minutes, and for a betta fish E at a dose of 100% (salinity of 19 ppt) causes the betta fish dying within a period of 50 minutes.

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