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ABILITIES OF TOMATOES (*Solanum lycopersicum*) AS BAIT IN A RAT TRAP

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ABSTRACT

Abilities of Tomatoes (*Solanum lycopersicum*) as Bait in a Rat Trap. Rats are rodents that harm humans and carry diseases, so it is necessary to control rats by using baited traps to trap rodents. The community commonly uses dried fish as bait, but the nature of rats necessitates other variations. s. The purpose of using tomatoes was to determine the ability of tomatoes and dried fish to act as bait in rat traps. This type of research uses a quasi-experiment. This study employed the post-test only control group design method, implementing three bait installation treatments: tomato, dried fish, and control. l. We conducted this research at the Bauntung market in Banjarbaru, repeating it 27 times with three treatments: tomato bait, dried fish, and no bait. The statistical tests revealed no significant difference in the average number of rats trapped in the bait between tomatoes and dried fish. This was because the number of mice trapped between tomato bait and dried fish bait did not show a significant difference. We expect the results of this study to provide useful suggestions for Bauntung Market managers and future researchers on rat control using tomato bait traps.

INTRODUCTION

Rats are rodents that cause harm to humans by consuming or damaging food, plants, and other items [1]. Some animals can adapt to human life, like rats. Rats are known to be reservoirs (disease carriers) of several diseases caused by rats. Rats can adapt well to human environments if these places can support their lives [2]. Rats have ectoparasites and endoparasites such as fleas, worms, fungi, viruses, protozoa, and bacteria that can cause various diseases in humans; therefore, it is necessary to treat them in the form of control rats [3]. Before carrying out control, it is very important to know the method of controlling mice, the nature or behaviors of mice, their nesting places, and their favorite foods [4].

Rats are the cause of many human diseases, some of which are leptospirosis, murine typhus, PES, and salmonellosis [5]. Rats residing in market areas have the potential to contaminate stored food by directly consuming it, causing damage, contamination, and becoming a source of disease in the surrounding area. The market environment poses a risk of leptospirosis transmission due to the large opportunity for infestation of leptospirosis reservoir animals, as well as the potential for stagnant water or poorly maintained toilet facilities to create an environment conducive to the growth of Leptospira bacteria [6].

In 2021, South Kalimantan province, particularly in Banjar Regency, conducted a rat density survey in 10 provinces at risk of transmitting leptospirosis. The types of rats caught were Rattus tanezumi with a percentage of 98%, Rattus norvegicus with 1%, and Mus caroli with

1% [7]. This necessitates control in accordance with the Republic of Indonesia Minister of Health Regulation Number 50 of 2017 [8], which outlines environmental health quality standards, health requirements for vectors and disease-carrying animals, and their management. Using baited traps for mouse extermination is a safer and more precise method of controlling mice compared to using chemicals, as it involves physical control methods such as traps [9]. Among the various types of trap models, the live trap model is the most frequently used for research purposes in the health sector [10]. We use live trap-type rat traps as the physical control method, and the most popular bait for rats is roasted coconut bait and various types of dried fish [11], [12],[13],[14].

Dietary habits and household waste, such as food in the kitchen, closely correlate with fishing success. The use of bait influences catching success [15]. There is no type of human food that mice cannot eat, whether raw or cooked. Mice exhibit neophobia, a tendency to be easily suspicious of objects they encounter, including their food [16]. The World Health Organization (WHO) standardizes rat trapping with roasted coconut [17], but people commonly use dried fish as bait in traps due to its effectiveness. Both the public and researchers commonly use dried fish as standard bait in mouse traps. Occasionally, mice become aware of the bait they place, either to deter them or to become familiar with the trap, necessitating the use of a diverse range of bait [18]. If the bait loses its appeal, it is necessary to switch to a different type [10].

Tomato (Solanum lycopersicum) is one of the most widely consumed vegetables in the world [19]. Tomatoes are in fifth place in vegetable crop production in Indonesia [20]. According to research, the ingredients found in tomatoes have benefits, one of which is to increase appetite. The sour taste of tomatoes comes from the citric acid content, which makes tomatoes taste fresh and can increase the appetite of mice [21]. When a rat tastes a tomato, the citric acid in it will react to increase the rat's appetite, making the rat want to eat it again.

MATERIALS AND RESEARCH METHODS

This type of research is quasi-experimental. This research uses the post-test-only control group design method [22]. The population in this study were all rats in the Bauntung Banjarbaru Market area [23]. In this study, the sample was the number of mice trapped, and we then tested the difference between tomato bait and dried fish bait.

There were three treatments in this study, namely tomato bait, dry fish bait, and no bait. Repetition is necessary to ensure the reliability of the research. We use these repetitions to minimize errors that occur during research. This research employs the Federer formula [24]. This research employs a parametric statistical test using one-way ANOVA [25].

RESEARCH RESULTS AND DISCUSSION

Univariate Analysis

Table 1. List of results for the number of mice trapped

	Tomato bait			Dried fish bait			No bait		
Test	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**
1	1	2	1	1	1	1	0	0	0
2	1	0	1	0	2	0	0	0	0
3	2	1	0	1	0	1	0	0	0
4	0	1	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	3	0	0	1	0	0	0
7	0	1	1	1	0	0	0	0	0
8	0	0	0	0	1	1	0	0	0
9	0	0	1	0	1	2	0	0	0

Σ	4	5	7	3	5	6	0	0	0

Information :
A : Point A
B : Point B
C : Point C

Table 1 provides a bar diagram that illustrates the number of trapped mice as follows:

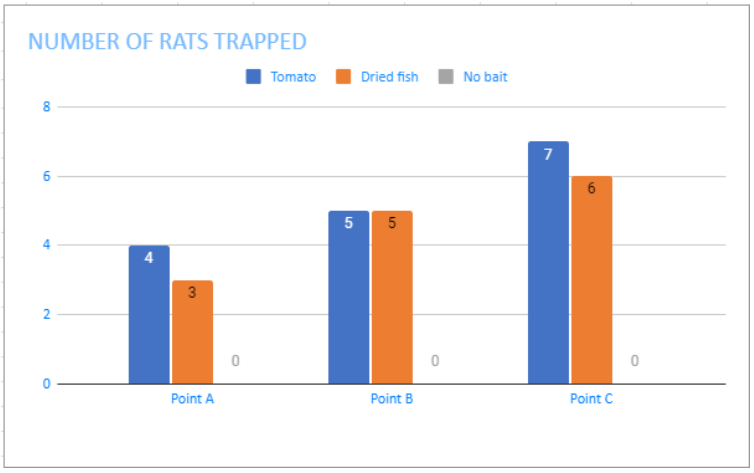

Figure 1. Bar diagram of the number of trapped mice

There were 16 mice trapped with tomato bait, 14 with dried fish bait, and 0 without bait. Based on the numbers, traps baited with tomatoes caught more mice than those baited with dry fish or without any bait. Bait less traps do not attract mice because there is no bait in them.

The results of this study showed that tomato bait attracted more mice than dried fish bait. According to previous research, the ingredients found in tomatoes are useful, one of which is to increase mice's appetite. The sour taste of tomatoes comes from the citric acid content, which makes tomatoes taste fresh and can increase the appetite of mice [21]. It also stimulates mice's appetite, making them want to eat again. This stands in contrast to dried fish, which solely relies on a potent aroma to entice mice. The characteristics of dried fish can stick in mice's memory and deter them from eating it [18].

BIVARIATE ANALYSIS

According to the results of the one-way ANOVA test, the number of mice trapped between tomato bait and dried fish bait did not show a significant difference, with a p value of 0.621 or more than 0.05. We can conclude that the average number of mice trapped in tomato and dried fish bait does not differ. Tomato bait can be a substitute for dry fish bait because there is not much difference in the number of mice caught.

The average number of mice trapped between tomato bait and dried fish bait was no different, but there was a significant difference between baited traps and traps without bait. This suggests that we can use tomato bait as a substitute for dry fish bait. This aligns with the assertion that if the bait loses its appeal, it's necessary to switch to a new type [10].

CONCLUSIONS AND RECOMMENDATIONS

The number of mice trapped with tomato bait was 16, consisting of 4 at point A (25%), 5 at point B (31.25%), and 7 at point C (43.75%). The number of mice trapped with dried fish bait was 14, consisting of 3 at point A (21.42%), 5 at point B (35.71%), and 6 at point C (42.85%). The conclusion from the statistical analysis was that there was no difference in the average

number of mice trapped between tomato bait and dried fish bait, so tomatoes could be an alternative bait besides dried fish.
The results of this study should help Bauntung Market management control rats using traps with tomato bait and serve as a guide for readers to conduct additional research with various variables.

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