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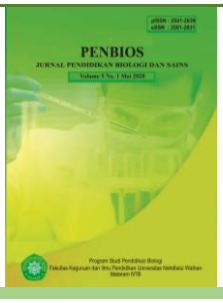

Research Article

The Effectiveness of Embryological Development in Fly Larvae (Diptera sp.) Against Several Types of Meat

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ABSTRACT

The purpose of this study was to determine the development of embryos in flies on several media, namely chicken meat, fish meat, and shrimp. This research was conducted in November 2022 in Laud Dendang Village, Kec. Percut Sei Tuan, Deli Serdang Regency, with data obtained from direct observation. The approach used in this research is quantitative in nature from the results of observing the life cycle of Diptera sp flies measured and observed in daily records, and the observations are made in tabular form, and the type of research conducted is descriptive in nature. This study aims to determine the development of embryos in flies on several media, namely chicken meat, fish meat, and shrimp. In this study using tools and materials that are easily available. using three media, namely the first media using 50 grams of chicken meat, then using 50 grams of fish meat media, and the third using 50 grams of shrimp meat media. The results of this study indicate that the stages from adult flies and producing eggs take 48 hours. Then the stages from eggs to larvae take 48 hours and then the stages from larvae to chicks take 72 hours and among the three media the most suitable media for flies are chicken meat because chicken meat is thicker and has sufficient moisture for the growth of flies.
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INTRODUCTION

One of the characteristics of living things is being able to reproduce, this can occur through marriage which will produce offspring. We often know flies with animals that like dead animal carcasses. Examples of flies that are often found on dead animal carcasses are from the Calliphoridae, Muscidae, or Sarcophagiae families. As stated by (Fitriana & Mulasari, 2021), the characteristics of the foods that flies like are foods that

contain protein, milk and processed foods that experience fermentation, and foods that have a strong odor.

Flies are also one of the orders of Diptera which have a close relationship with human habitation, as well as on farms. We can see that the fly population is very high. This is because the fly's life cycle is fast and short, then the fly is one of the animals that has a fairly high reproductive capacity, the availability of food that is easy to get.

Chicken meat contains high-free water and nutrients. (D. A. Wijayanti & Fakultas, 2013) said that chicken meat has a protein content of 18.20 grams then 25 grams of fat, and has calories of 404 Kcal per 100 grams of meat. Then it is also known that chicken meat is a source of high-quality protein, and contains complete essential amino acids and high unsaturated fatty acids. Fish and shrimp are also sources of protein which are quite high. Fish spoilage is caused by the degradation of fish meat due to enzyme activity, then shrimp meat contains protein, fat, phosphorus, and calcium. This study aims to determine the development of embryos in flies on several media, namely chicken meat, fish meat, and shrimp.

METHOD

This research was conducted in November 2022 in Laud Dendang Village, Percut Sei Tuan Disctrict, Deli Serdang Regency, with data obtained from direct observation. The approach used in this study is quantitative from the observations of the life cycle of Diptera sp flies measured and observed in daily records. These observations are made in the form of tables, and the type of research conducted is descriptive. This study uses tools and materials that are easy to get, where the tools used are three medium-sized jars and gauze which function to cover the jar so that the larvae and flies that develop in it do not come in and out. Stationery is used to record observations and a camera that serves to document each research activity. Then the materials were used in the form of three different types of meat namely chicken meat, fish meat, and shrimp meat with a weight of 50 grams each (**Figure 1**). For the work procedure, namely, first, prepare the tools and materials used; second, wash the chicken, fish, and shrimp meat thoroughly; third, put the three types of meat into each jar and cover the jar with gauze then place the three jars at room temperature (27^{o}C -30^{o}C), then document and observe the growth of fly larvae around the meat until they become flies.

Figure 1. Tools and materials in research to determine embryo development using 3 media, namely shrimp meat, chicken meat, and fish meat

RESULTS AND DISCUSSION

Table 1. Observation of Egg Appearance Stages

Development Media	Descriptions			
	Adult flies that enter the jar	Number of Eggs (±)	The Average Length of The Egg (±) (mm)	Times (hours)
Chicken meat	5	128	1,2	48
Fish meat	3	98	1,2	48
Shrimp meat	2	95	1,2	48

Table 2. Larva Observation

Development Media	Descriptions		
	Number of Larva	The Average Length of the Larva (±) (mm)	Times (hours)
Chicken meat	101	4	48
Fish meat	90	4	48
Shrimp meat	70	4	48

Table 3. Observation of tiller flies

Development Media	Descriptions		
	Number of Flies	The Average Length of the Flies (±) (mm)	Times (hours)
Chicken meat	87	5	72
Fish meat	70	5	72
Shrimp meat	56	5	72

Diptera sp. flies are flies that like to perch on meat where it likes smelly, rotten meat. The meat that is put into the jar serves to lure the flies inside. The meat used is clean meat that has been washed, it can be seen that from several media, the media that most adult flies enter is the media in the form of chicken meat, this is because the humidity in chicken meat is higher than in fish and shrimp meat. Flies like wet places such as rotting plants, wet or slimy rotting meat, wet garbage, animal dung, organic matter, and dirt that accumulates cumulatively (animal cages).

Flies do not like scattered breeding grounds, generally brooding places for flies are dirty and wet places, after a few hours the jar is left alone, and the adult flies will perch. Then lay eggs after 48 hours, wherein several media are seen in the observation table that the chicken meat medium is the medium most preferred by flies. It leaves the eggs for approximately 48 hours and produces 128 eggs with an average egg size of 1.2 (mm). It can be seen from the observation that the shape of the fly eggs is elongated with a yellowish-white color. This is what was said by (Astuti & Pradani, 2010) who stated that

fly eggs are shaped like bananas with a length of about 1-1.2 mm and are yellowish-white and in an adult fly can produce 120-150 eggs. Then the Diptera sp fly eggs will change and hatch into larvae, taking 48 hours it can be seen that the average length of the larvae is 4 (mm). It can be seen in comparison that from eggs turning into larvae, the number is decreasing this is due to the presence of some larvae that have died due to weather or temperature as said (Astuti & Pradani, 2010). The time required for the development of eggs from oviposition to hatching is influenced by temperature, at 35 degrees Celsius from 6 to 8 hours. Temperatures below 13 degrees Celsius is an extreme temperatures so that the development of flies does not occur. (Arum et al., 2020) states that the fly's body is influenced by suitable climates such as temperatures 10^{o}C - 30^{o}C with humidity of 62-90% as well as the intensity of sunlight and wind speed. It takes 3 days for the growth of the larvae to become chick flies, so it can be seen that from the start of the initial process; until the larvae become puppies takes 7 days. This is following the theory from the Ministry of Health et al., (1992) in (Hardianty et al., 2017) which states that flies undergo metamorphosis from eggs to adult flies whose life cycle is 6-20 days, the length of this life cycle is influenced by the nutritional content of the feed. and environment. After becoming puppies, it can be seen that there are several new larvae. It is possible that the adult parent flies dropped their eggs on the gauze so that the eggs entered the jar. This is due to the structure of the gauze which is thin and in the form of loosely woven threads.

CONCLUSION

The development of each stage of Diptera sp. is influenced by environmental factors (humidity) of the media or place of residence, besides that the protein content of the media and the adaptability of flies are also factors that affect the growth of flies. The stages from adult flies and producing eggs take 48 hours. Then the stages from eggs to larvae take 48 hours and then the stages from larvae to young flies take 72 hours. Among the three most suitable media for the development of flies is chicken meat. This is because chicken meat is thicker and has enough moisture for the growth of flies.

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