# I. INTRODUCTION

## 1.1. Background

West Sumatra province is the centers of fresh water fish farming activities for both consumption or ornamental fish, eg tilapia fish, cat fish, gold fish, pangas cat fish, giant gourami, hickey, koi, flowerhorn cichlid, and others. In the process, the cultivation requires natural feed mainly on fish hatchery phase after yolk or egg yolk separated into juvenile sized fish. Natural food in addition to high nutrient for its growth and its development is also very easily utilized by fish larvae due to generally correspond to the fish mouth openings (Thariq, Mustamin, and Putro 2002; Pennnak, 1989). Natural food which is widely used in fish hatcheries is that zooplankton (*Daphnia magna*) (Soelistyowati, 1978, Mokoginata, Jusadi, and Pelawi, 2003).

*Daphnia magna* is a group of small crustaceans, known well as *non selective filter feeder*. *D. magna* very easy to developed, as well as quick harvest time and can be enriched with natural food that is available in nature. In nature, the *D. magna* consumed foods in form microalgae, bacteria, ciliate, and detritus (Noerdjito, 2004). But there is a common problem, based on interview with the fish farmers in Padang, Pariaman And Pesisir selatan district, the price of natural feed *D. magna* Is very expensive, is Rp. 150.000/liter and most of them are imported from abroad and other areas outside of West Sumatra. While the activity of natural food cultivation has not developed yet.

The content on *D. magna* adults has higher fat compared with the juvenile that is 20–27% on adults, 4-6% on juveniles. In some species of *D. magna* protein by as much as 70%. The value of the nutrients contained in the wet weight of *D. magna* is 4% protein, 0,54% fat, and 0,67% carbohydrates. *D. magna* has several Digestive enzymes

such as proteinase, peptidase, amylase, lipase, and cellulose serves as exo-enzymes in the digestive tract (Lithner *et al*, 2009).

The additional of *D. magna* in fish farming and fish consumption, able to increase the growth of fish life graduation. Research Husniya, Gofur, and Listyorini (2016) found that, type of food which provides a true effect on the weight gold fish (*Cyprinus carpio*) strain by feed it with *Daphnia* sp.

In aquaculture activities, *D. magna* required microalgae as a source of food. Microalgae is a lower plant commonly called phytoplankton in the trophic level is called the food producer (Fitra, Zakaria and Syamsuardi, 2013; Merina, Zakaria and Chairul, 2016; Zakaria, Asrayanti and Chairul, 2016). Microalgae have a high nutrient content in the form of protein and fatty acids (Simopolus, 2002). Proteins and fatty acid contained in microalgae, therefore, it was important to feed *D. magna* so it will indirectly increase the growth and nutrient content of *D. magna* needed by fish larvae to survive. Some species of microalgae which have a high content of fatty acids are : *Myconastes rotundus, Chlorella emersonii, Scenedesmus dimorphus,* dan *Scenedesmus Amartus* researched by Dharma, Perdana, and Zakaria (2019). Based on the information the addition of microalgae research, to boost growth and fatty acid *D. magna* which can later be used as feed in fish farming.



**1.2 Problem Formulation**

Based on the background of the problem above, the problem can be formulated in this study, namely:

1. How does the population addition of *Daphnia magna* after fed with the different microalgae ?

2. How does the body length individual addition of *Daphnia magna* after fed with the different microalgae ?
3. How is the rate of growth individual of *Daphnia magna* after fed with the different microalgae ?

## 1.3 Research Objective

The purpose in the study are :

1. Knowing the population addition of *Daphnia magna* after fed with the different microalgae.
2. Knowing the body length individual addition of *Daphnia magna* after fed with the different microalgae.
3. Observing the population growth rate of *Daphnia magna* after fed with the different microalgae.

## 1.4 Benefit of Research

The benefits of the research are to get the type of microalgae that can increase the rate of growth and survival as well as the nutritional content of *Daphnia magna* good in meeting the nutritional needs of fish larvae feed.