NUSANTARA BIOSCIENCE

ISEA JOURNAL OF BIOLOGICAL SCIENCES

| Nusantara Biosci | vol. 9 | no. 2 | pp. 111-235 | May 2017 |
| ISSN 2087-3948 | E-ISSN 2087-3956 |

Soybean flowers photo by Gabriel Matzkin

NUSANTARA BIOSCIENCE
Vol. 9, No. 4, pp. 378-384
November 2017

ISSN: 2087-3948
E-ISSN: 2087-3956
DOI: 10.13057/nusbiosci/n090407

Different levels of the fermented yellow cornmeal in diets for jelawat, *Leptobarbus hoevenii*

HENDRY YANTO[1,♥], JUNIANTO[2,♥♥], RITA ROSTIKA[2,♥♥♥], YULI ANDRIANI[2,♥♥♥♥], DEDI JUSADI[3,♥♥♥♥]

[1]Program in Aquaculture, Faculty of Fisheries and Marine Sciences, Universitas Muhammadiyah Pontianak. Jl. Jend. Ahmad Yani No. 111 Pontianak 78124, West Kalimantan, Indonesia, ♥email: hendry_fpikump@yahoo.co.id

[2]Department of Fisheries, Faculty of Fisheries and Marine Sciences, Universitas Padjajaran. Jl. Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, West Java, Indonesia. ♥♥email: anto_lisc@yahoo.com, ♥♥♥ ritarostika_unpad@yahoo.com, ♥♥♥♥ yuliyusep@yahoo.com

[3]Department of Aquaculture, Faculty of Fisheries and Marine Sciences, Institut Pertanian Bogor. Jl. Lingkar Akademik, Kampus IPB Darmaga, Bogor 16680, West Java, Indonesia. ♥♥♥♥♥ email: siflounder@gmail

Manuscript received: 29 April 2017. Revision accepted: 20 November 2017.

Abstract. *Yanto H, Junianto, Rostika R, Andriani Y, Jusadi D. 2017. Different levels of the fermented yellow cornmeal in diets for jelawat,* Leptobarbus hoevenii*. Nusantara Bioscience 9: 378-384.* This research aimed to determine the optimum level of fermented yellow cornmeal in diets to improve the digestive enzyme activity, material digestibility coefficient, growth and feed efficiency for jelawat (*Leptobarbus hoevenii* Bleeker). The experimental treatments respectively used the fermented yellow cornmeal level of A1 (10%), A2 (20%), A3 (30%), A4 (40%), and two control groups of A5 (10% of unfermented yellow corn meal) and A6 (commercial diet). The experimental diets with the same protein (isonitrogenous) and energy (isocaloric) were given to jelawat with an average size of 32.51±0.21 g per fish. The results showed that α-amylase activity and carbohydrate digestibility value of the fermented yellow cornmeal increases along with the increasing feed levels. Protein and lipid of the body, retention of protein and lipid, daily growth rate and feeding efficiency were significantly different from each treatment ($P<0.05$). The fermented yellow cornmeal containing a level of 30% in the diet was the best for *jelawat* with an optimum level of 28.21-32.28% for the growth performance and feed efficiency of jelawat.

Keywords: Digestibility coefficient, enzyme activity, fermentation, *Leptobarbus hoevenii*, yellow cornmeal

INTRODUCTION

Jelawat (*Leptobarbus hoevenii* Bleeker) is one of freshwater fish types which has good cultivation development prospect. Southeast Asian people such as Indonesians, Malaysians, and Bruneians prefer jelawat very much that it brings it to have higher economic value, and in Indonesia, it is considered as one of exported commodities (*Warta Pasarikan*, 2010). The jelawat fingerlings have been mass produced by the artificial spawning technology to support its availability, particularly for fish growing cultivation. As omnivorous fish but tends to be herbivore, jelawat might consume various food which are relatively easy to find. The food habit brings the potential to utilize various feed made of plant materials efficiently.

Yellow corn is a local material utilized by fish as energy sources, and in the form of meal, it is commonly used in the formulation of fish diet and it still contains nutrients as energy sources. Economically, yellow corn meal is also easy to find in large quantities with relatively cheap price. Yellow cornmeal is expected to be utilized by jelawat as energy sources.

Fish are unable to utilize carbohydrates maximally. Fish ability to utilize carbohydrates are limited and various, for example, herbivorous fish groups are able to utilize carbohydrates of only 30-40% while omnivores are about 10-20% of their total diet formulation as their ability to produce amylase enzymes and insulin activities are low (Craig and Helfrich, 2009). Various efforts have been made for fish on the improvement of carbohydrate utilization efficiency and they are highly necessary.

Efforts to improve the carbohydrate utilization efficiency are by administering diet with optimum carbohydrate level. Excessive carbohydrates level in the diet may cause degeneration of liver cells, glycogen accumulation which stimulates lipid accumulation and liver disease on fish. It also decreases protein utilization efficiency and growth rate of sunshine bass, *Marone chrysopsx* and *M. saxatilis* (Hutchins et al. 1998), and those of European sea bass, *Dicentrarchus labrax* (Perez et al. 1997). In contrast, when carbohydrate level is low, it does not decrease the fish growth rate, but the diet price may become more expensive. The optimum level of carbohydrates should be maximally utilized as energy sources for fish.

Fermentation technology is another effort to improve the utilization of carbohydrates as energy sources in fish. Pawiroharsono (2007) suggested that fermentation is all kinds of metabolic processes assisted by enzymes generated from microorganisms to perform oxidation, reduction, hydrolysis, and other chemical reactions either in the anaerobic or aerobic condition which results in chemical changes of organic substrates. Fermentation aimed to simplify the complex compounds into the simple