

RINGKASAN

Ikan lele (*Clarias gariepinus*) merupakan ikan air tawar yang sering dibudidayakan oleh masyarakat. Secara biologis ikan lele mencerna makanan dibantu oleh enzim dalam proses hidrolisisnya. Enzim pencernaan ikan lele terdiri dari amilase, protease dan lipase. Ikan lele adalah ikan omnivora yang cenderung karnivora oleh karena itu protease adalah enzim cerna yang paling tinggi aktivitasnya. Protease adalah enzim penghidrolisis protein menjadi asam amino. Protease berdasarkan lingkungan kerjanya dibagi menjadi dua yaitu *acid protease* (protease asam) dan *alkaline protease* (protease basa). Contoh *Acid protease* adalah pepsin yang aktivitasnya banyak di bagian lambung sedangkan *alkaline protease* contohnya tripsin-like yang aktivitasnya banyak di bagian intestin. Studi terdahulu tentang aktivitas pepsin dan tripsin-like telah dilakukan namun aktivitas kedua enzim ini terkait dengan perbedaan temperatur pada ikan lele belum banyak dilakukan.

Penelitian ini bertujuan untuk (1) Mengetahui pengaruh temperatur yang berbeda terhadap aktivitas pepsin dan tripsin-like ikan lele (*Clarias gariepinus*), (2) Mengetahui temperatur optimum pada aktivitas pepsin dan tripsin-like ikan lele (*Clarias gariepinus*). Penelitian ini menggunakan metode eksperimental dengan rancangan percobaan berupa rancangan acak lengkap (RAL) enam perlakuan yaitu temperatur 20°C, 30°C, 40°C, 50°C, 60°C dan 70°C, serta setiap perlakuan diulang sebanyak lima kali. Sampel ikan lele yang digunakan dalam penelitian ini berjumlah 60 ekor dengan berat $21,373 \pm 2,887$ g dan panjang $15,244 \pm 1,262$ cm yang diperoleh dari pengepul ikan lele di Kabupaten Banyumas, Jawa Tengah. Variabel penelitian ini adalah temperatur, aktivitas pepsin dan tripsin-like. Parameter pada penelitian ini adalah kadar tirosin diukur dengan metode spektrofotometer pada λ 720 nm. Analisis data dilakukan dengan *one way ANOVA*, dilanjutkan dengan uji lanjut Beda Nyata Jujur (BNJ) dengan tingkat kesalahan 5%.

Berdasarkan hasil pengukuran aktivitas pepsin dan tripsin-like ikan lele (*Clarias gariepinus*) diketahui bahwa perbedaan temperatur inkubasi 20°C, 30°C, 40°C, 50°C, 60°C dan 70°C berpengaruh nyata terhadap aktivitas pepsin dan tripsin-like ($p < 0,05$). Aktivitas pepsin tinggi berkisar pada temperatur 20-40°C dan aktivitas tripsin-like tinggi berkisar pada temperatur 40-60°C. Kesimpulan penelitian ini perbedaan temperatur berpengaruh nyata terhadap peningkatan dan penurunan aktivitas pepsin dan tripsin-like. Aktivitas pepsin tinggi berkisar pada temperatur 20-40°C dan tripsin-like tinggi berkisar pada temperatur 40-60°C

Kata Kunci: *Clarias gariepinus*, pepsin, temperatur, tripsin-like

SUMMARY

Catfish (*Clarias gariepinus*) is a freshwater fish that is commonly cultivated by the local community. Catfish biologically digest food using enzymes for the hydrolysis process. The digestive enzymes of catfish consist of amylase, protease and lipase. Catfish are omnivorous fish that are more likely to be carnivorous, therefore proteases are the digestive enzymes with the highest activity on catfish. Protease is enzymes that hydrolyze proteins into amino acids. Protease based on its spesific pH are divided into acid proteases and alkaline proteases. The example of acid protease is pepsin which has a lot of activity in the stomach, The example of alkaline protease is trypsin-like which has a lot of activity in the intestine. Previous studies on pepsin and trypsin-like activity have been carried out but the activity of these two enzymes related to temperature differences in catfish has not been widely carried out.

This research aims to (1) Determine the influence of different temperatures on the activity of pepsin and trypsin-like catfish (*Clarias gariepinus*), (2) Determine the optimum temperature on the activity of pepsin and trypsin-like catfish (*Clarias gariepinus*). This research uses experimental methods to the experimental design in the form of completely randomized design (CRD) six temperature treatments of 20°C, 30°C, 40°C, 50°C, 60°C and 70°C, and each treatment was repeated five times. The catfish sample used in this study found 60 fish weighing $21,373 \pm 2,887$ g and a length of $15,244 \pm 1,262$ cm from fishmonger in Banyumas Regency, Central Java. The variables of this study were temperature, pepsin activity and trypsin-like activity. The parameter in this study is the tyrosine level which will be measured by the spectrophotometer method at λ 720 nm. Data analysis was carried out using one way ANOVA, followed by Tukey's Honestly Significant Difference Post Hoc Test with an error rate of 5%.

Based on the measurement of pepsin and trypsin-like activity of catfish (*Clarias gariepinus*) it was found that the different incubation temperatures of 20°C, 30°C, 40°C, 50°C, 60°C and 70°C significantly affected pepsin and trypsin-like activity ($p < 0.05$). High activity of pepsin ranged at a temperature of 20-40°C and high activity of trypsin-like was at a temperature of 40-60°C. The conclusion of this study were that the temperature difference significantly affected on increasing and decreasing of pepsin and trypsin-like activity and the optimum temperature was obtained for the pepsin activity 20-40°C and high activity of trypsin-like was at a temperature of 40-60°C

Keywords: *Clarias gariepinus*, pepsin, temperature, trypsin-like