



Case Report

Identification of *Yersinia* spp in Catfish (*Claria* spp) Attacked Enteric Redmouth Disease at the Education Veterinary Clinic, Hasanuddin University

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Abstract

Catfish is one of the fish that has a high economic value so that it becomes one of the export commodities to meet the consumption and protein needs of the community so that it is widely cultivated. In cultivation, catfish can be attacked by various diseases, one of which can be caused by bacteria. The bacteria that often cause death in fish, both marine and freshwater fish, is Yersinia spp. Yersinia spp is a group of gram-negative bacteria, in the form of bacilli and motile and is also reported to be one of the pathogenic diseases that often attack fish. samples were taken on August 12, 2021 from the mouth organs of catfish at the Hasanuddin University Education Animal Clinic. Samples were cultured in Tryptic Soy Agar (TSA) for 24 hours and then purified in Mac Conkey Agar (MCA). The culture results showed the presence of bacterial growth. Follow-up examination using a microscope and showed the presence of red (Gram negative) and bacilli-shaped bacteria

Keywords: Catfish, MCA, TSA, Yersinia

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Introduction

Catfish is one type of fish diversity that is the potential of Indonesia's marine resources that are cultivated by the community. In its cultivation, it is necessary to pay attention to its health because Catfish has fast growth and resistance to unfavorable environments so that it is never separated from the threat of various diseases, one of the causes of which is bacteria. Bacteria are the causative agents of infection, which means that they cause the invasion and breeding of microorganisms in the body of the fish itself and can sometimes cause mass death. One of the pathogenic bacteria in Catfish is *Yersinia* spp. *Yersinia* spp is a bacterium that causes yersiniosis that causes very high mortality and causes severe economic losses in freshwater fish farms. This *Yersinia* spp attack makes the fish peteki on the skin, causing erosion of the fins and causing erythema bleeding in the mouth and lips of the fish (Umi et al. 2013; Rahmaningsih, 2018; Abdel-Latif et al. 2014).

Materials and methods

a. Sampling

The sample was catfish (*Clarias spp*) which was then dissected aseptically at the Veterinary Clinic of Hasanuddin University. Samples are obtained by taking organs such as the mouth, liver, and spleen. Bacterial isolates from such samples for susceptibility to common tryptic Soy Agar (TSA) and Mac Conkey Agar (MCA).

b. Isolation and Identification of *Yersinia spp*

Organs taken such as the mouth, liver and spleen of fish are placed into petri dishes, then cultured in the general media Tryptic Soy Agar (TSA) and then incubated at a temperature of 37 °C for 24 hours followed by planting in Mac Conkey Agar (MCA) at a temperature of 37°C for 24-48 hours.

Observations made are directly identified morphologically i.e. observations of cell shape, color and elevation of colonies. In addition, gram coloring is also carried out and then the identification process continues using differential media in this case is Mac Conkey Agar (MCA).

Results and Discussions

Catfish taken with the condition of the mouth and mandible, pectoral fin, isthmus region and the skin have bleeding and abdominal area and there is distension in the abdominal area according to Kumar et al (2015); El-Seedy et al (2015); Dali (2016); Zorriehzahra et al (2017) hemorrhagic lesions in the oral cavity, pectoral fins, pelvic fins and skin as well as abdominal distension.



Figure 1. (a) hemorrhagic in oral cavity, (b) hemorrhagic in Skin, *isthmus* region dan *pectoral* fin

After performing necropsy, changes were found in several internal organs such as the liver enlarged and hemorrhagic, the spleen is black and there is a hemorrhagic in the intestines and contains a yellow liquid which is in accordance with what kumar *et al.* (2015); El-Seedy *et al.* (2015); Aly *et al.* (2021) that in some internal organs affected by *Yersinia spp* such as spleen will appear enlarged and will appear black and damaged, enlarged liver and kidneys and there are hemorrhagic in the intestines and will contain yellow fluid and hemorrhagic in the liver, spleen and intestines.

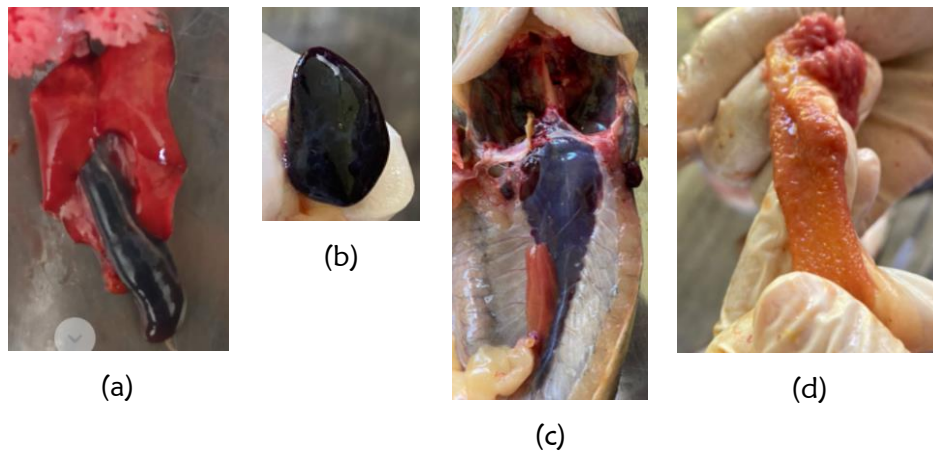


Figure 2. (a) Enlarged and congestion of liver , (b) Enlarged and Black of Spleen , (c) Enlarged of Kidneys , (d) Hemorrhage in the intestine and there is a yellow fluid.

After performing a necropsy and taking body parts such as the mouth, liver and spleen, the samples were cultured on TSA media aseptically and then incubated for 24 hours, pale white and opaque on the media according to the opinion of Zorriehzahra *et al.* (2017) that it will form pale white and opaque colonies.

Furthermore, gram staining was performed to determine the type of bacteria that had grown on TSA (*Tryptic Soy Agar*). Gram staining was carried out by taking a bacterial suspension on the culture medium and then fixation. After fixation, the bacteria were then dripped with crystal violet for 1 minute, then washed and dried. Then the bacteria were dripped with a solution of iodine/potassium iodide for 1 minute, then washed and dried. After that, drip with lugol on the whole object for 60 seconds, wash with running water. Then add 95% alcohol and let it dry. Add fused carbolate/safranin to the entire slide for 2 minutes. Rinse with clean water and dry. Then make observations under a microscope (Safriada *et al.* 2012).

The results found are the bacteria are gram negative which is red. Which is in accordance with research that has been carried out by Ijong (2015); Safrida et al (2012) that gram-negative bacteria have a higher lipopolysaccharide layer and thinner peptidoglycan than gram-positive bacteria so that these bacteria are not able to bind the crystal violet-iodine color when rinsing alcohol and only absorb safranin dye so that it looks red or red-pink.

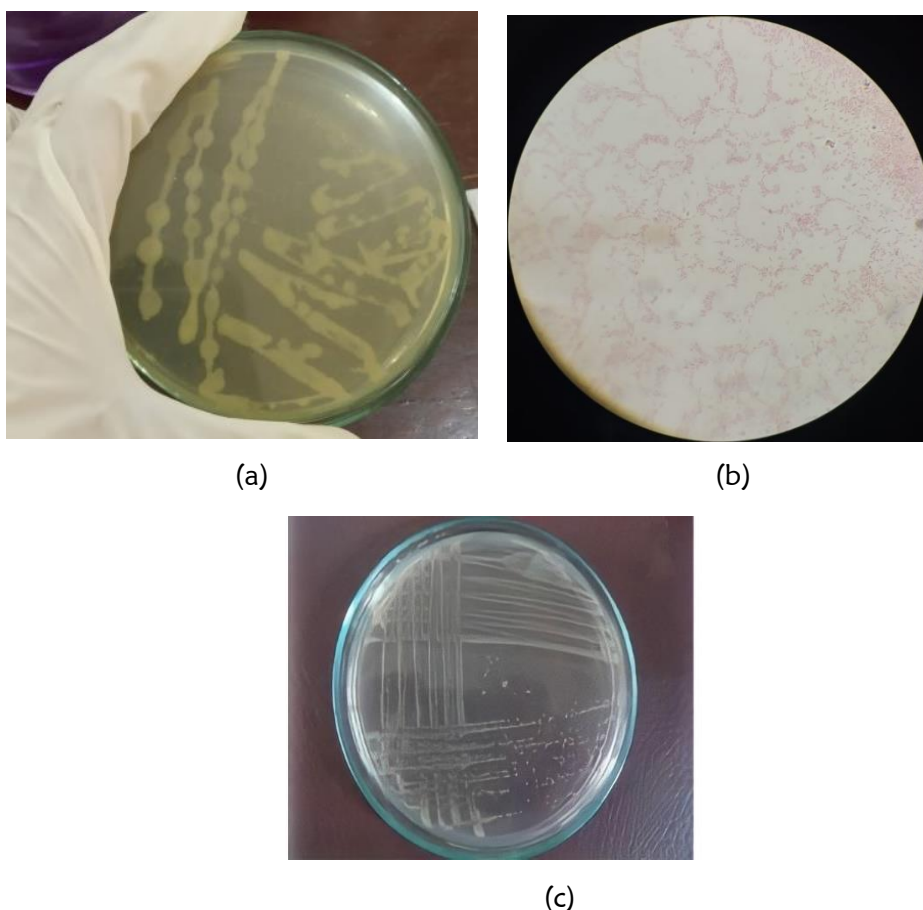


Figure 3. (a) Colony in Tryptic Soy Agar, (b) *Yersinia spp* in Gram Staining, (c) *Yersinia spp* in Mac Conkey Agar (MCA)

After gram staining, then continued planting on MCA (Mac Conkey Agar) media which is a selective medium usually used for the growth of *Yersinia spp* bacteria in fish. Bacterial isolates were streaked on MCA (Mac Conkey Agar) media, then incubated for 24-48 hours at 37°C. The results obtained were colonies that grew colorless and flat in accordance with the opinion of Dali (2013); MWL (2022) stated that the interpretation of *Yersinia spp* on MCA (Mac Conkey Agar) media will be round with smooth edges without indentations and slightly flat elevation, transparent color because *Yersinia spp* bacteria cannot ferment lactose.

Conclusion

Based on the identification of bacteria in catfish that experience hemorrhagic in the pectoral fin, the mouth area and mandible identified gram negative bacteria with the form of basil bacteria and grow on Tryptic Soy Agar (TSA) and Mac Conkey Agar (MCA) media which is a selective medium for *Yersinia spp* bacteria. So it can be concluded that the catfish is attacked by *Yersinia spp* bacteria.

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