Poster Presentation (PF-26)

The Use of Endemic Sulawesi Medaka Fish (*Oryzias celebensis*) as an animal model candidate

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INTRODUCTION

Medaka fish (*Oryzias sp*) or also known as "rice fish" are non-consumption fish or ornamental fish that are in great demand by humans. Medaka fish is an animal model that is very well known and has been widely used by researchers in the world for studies in various fields of science, especially biology and medicine, as well as Zebras which have been developed as model animals. Medaka fish also used as animal models for testing Parkinson's disease caused by environmental pollution and genetic factors. Several types of mutant medaka fish have also been made for screening diabetes, cancer and other degenerative diseases.

From the exploration results, the researchers showed that Sulawesi has a high endemism especially for the family Adrianichthyidae. The high endemism is not only supported by zoogeographic boundaries as islands located on the Weber line and Wellacea lines, but also because of this fish that are traded so that the chance of migrating this fish is small. These facts underlie the statements of several researchers that fish medaka can reveal the mystery of the evolution of aquatic fauna in Sulawesi.

As an effort to develop Sulawesi Medaka fish (*Oryzias celebensis*) as a model animal, studies have been conducted with various histology studies with various staining methods in Sulawesi medaka fish so that Hasanuddin University is expected to be a gateway for researchers to obtain information about Medaka fish in the Sulawesi islands and as a center for learning fish medaka.

MATERIALS AND METHODS

Fish sampling is carried out using a net (gill net) measuring 10x10 m2 by involving residents who are fishermen and used to catch Medaka fish. Samples were obtained from the Pattunuang river, Rammang-Rammang, Maros Regency. Samples collected live to be kept in the laboratory. Sampling is done randomly using gill net. Samples of caught fish are then put into containers. Furthermore, the sample was taken to the laboratory for the acclimatization method. Acclimation for a minimum of 10 days because if within 48 hours more than 3% of the population of the test animal dies, the population of the test animal is considered not eligible for testing

Histology preparations was carried out at the Veterinary Pathology Laboratory of the Veterinary Study Program, Faculty of Medicine, Unhas. Samples that have been stored in 10% neutral formalin solution for 3 days are then processed with routine histotechnic.

RESULT AND DISCUSSION

Medaka is a small Asian native fish (2-4 cm) from the Adrianichthyidae Family and Beloniformes Nation. Medaka fish live in habitats ranging from small rivers, large rivers, ponds, waterfalls, ponds, lakes, rice fields to river mouths. Often, Medaka fish are found in a small river that flows swiftly with a rocky substrate. Medaka fish are also found to live in quiet rivers with muddy substrates and contain many litters of plants that sink in the bottom of the waters.

Medaka fish species in South Sulawesi are centered around the Maros-Pangkep Karst area and Malili lake complex in East Luwu District. Medaka fish found around Karst Maros Pangkep is generally dominated by *Oryzias celebensis*. Medaka fish in East Luwu has a unique distribution pattern, because each lake has its own endemic species, although the lakes are located close together. The endemic Medaka found on Lake Matano generally has black spots and consists of 2 species, namely: *Oryzias marmoratus* and *Oryzias matanensis.* The endemic Medaka

Lake Towuti is *Oryzias profundicola* prefers deep habitat. Sulawesi medaka fish body shape, a terminal mouth, a pair of pectoral fins, a pair of short pelvic fins, a dorsal fin that is much shorter than the anal fin which is close to the caudal fin, has a longer, thicker anal fin and jagged in male fish and have caudal fins that are orange yellow on the edge of the tail in male medaka fish. There is a fundamental difference in the morphology of fish medaka Sulawesi Oryzias celebensis between male and female can be seen in the following figure (Figure 1), while the morphology of fish medaka Sulawesi can be seen in the following figure (Figure 2).

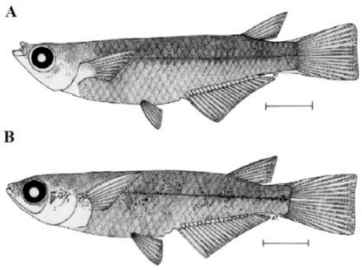

Figure 1. Sulawesi Medaka Fish, *Oryzias celebensis*, A (Male) dan B (Female). Source: Source : Magtoon dan Termvidchakorn, 2009

The histological picture of Sulawesi medaka is obtained by making histological preparations using standard histotechnical techniques. The following is a cross section of Sulawesi Medaka fish that shows the position of various Sulawesi Medaka fish organs (Figure 3.)

Figure 2. Sulwesi Medaka Fish (*Oryzias celebensis*)

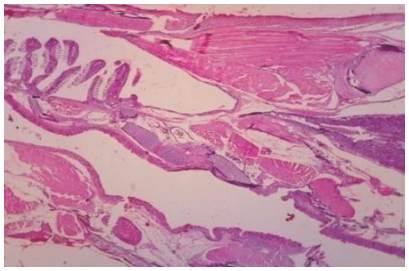

Figure 3. Cross section of Sulawesi Medaka Fish. A, B: 4x10 enlargement.

The histological staining of Sulawesi medaka fish is done by observing per organ system including hematopietik system, olfactory system, nervous system, respiratory system, lymphatic system, circulatory system, musculoskeletal system, digestive system, excretory system, reproductive system, hematopietik system. One example observed is the hematopoietic system in Sulawesi Medaka fish similar to Zebra fish. Unlike mammals, bones from fish, a type of teleost, including Sulawesi Medaka fish, do not have a medulla space where the hematopoietic process occurs. Hematopoietic tissue is found in the spleen and kidney stroma. In the mature Sulawesi Medaka fish, the hematopoietic system is found in the intersisium area of the kidney. From the overall results of the study showed that Sulawesi medaka fish is suitable for use as an alternative animal model alternative to Zebra fish.

CONCLUSION

From the results of the study, it was obtained a description that the histological structure of Sulawesi medaka fish has similarities with Zebra fish unless there are some differences in some organ systems. It was found that the medaka fish of Sulawesi as an endemic fish in the area of South Sulawesi can be used as an alternative animal model in addition to Zebra fish.

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