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Crystals on Sulcus Acusticus of Sagitta of *Muraenesox Cireneus*

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Summary

Crystals on sulcus acusticus of sagitta of *Muraenesox cireneus* from southern of Thailand were investigated by scanning electron microscope. Two kinds of crystals, circular, disc-shaped and long, rod-shaped; were found and described. The disc-shaped crystals are distinctive crystals of this fish species and will be useful for identification of the fish.

Keywords: sagitta, sulcus acusticus, crystals, identification, *Muraenesox cireneus*.

Sagitta is an otolith (earstone) found in the inner ear of teleost fishes. The sulcus acusticus (sulcus) is a groove on medial side of sagitta. It is the area where macula (sensory epithelium) lies in close contact with, and it has macula-shaped. The sagittae are responsible for sound reception and equilibrium of the fish [1]. Morphology and structure of sagitta and crystals on sulcus of teleost fishes have been studied and used as a tool for identification of fish species and stock of fishes by many researchers [1-3].

Muraenesox cireneus are fishes in order Anguilliformes, family Muraenesocidae. They are highly commercial fishes and live in diversified habitats. This study aims to investigate the crystals on sulcus of sagitta of *M. cireneus*, in order to use these characters to be a key to identify *M. cireneus* from other fishes especially from fishes in family Muraenesocidae.

Sagittae were collected from *M. cireneus* from the southern coasts of Thailand and stored dry in vials. Morphology and structure of sagitta and crystals on sulcus were investigated by scanning electron microscope (JEOL, JSM-6400).

The sagitta of *M. cireneus* is oblong-shaped, smooth margin with no indentations. Sulcus is divided into ostium and cauda and opens onto the anterior margin, no clear differentiation into ostium and cauda (Fig.1). Two morphological types of crystals on sulcus are found, i.e. circular, disc-shaped and long, rod-shaped. The disc-shaped crystals are convex at the center and have small layers and patches on the surface (Fig. 2 and 3). They can be separated into three types according to a hole in the center. Type I crystal does not have a hole whereas type II crystal shows many small pores and type III crystal has a large hole in the center (Fig 2-6). The type III crystals are more numerous in ostium than in cauda, while type I crystals appear to be more in cauda than in ostium (Fig 2-4). The rod-shaped crystals are found only in ostium (Fig. 4-6). The transitional zone between disc-shaped and rod-shaped crystals can be seen in Fig. 5. Fusion of two types of crystals is found (Fig. 6).

Many types of crystals on sulcus of sagitta in teleost fishes have been reported such as in *Coelorinchus* spp. [2] and in *Nemipterus* spp. [4]. However, disc-shaped crystals have never been reported. The disc-shaped crystal of *M. cireneus* is a distinctive morphology, which is species specific. It will be used as the important key to identify this fish species.

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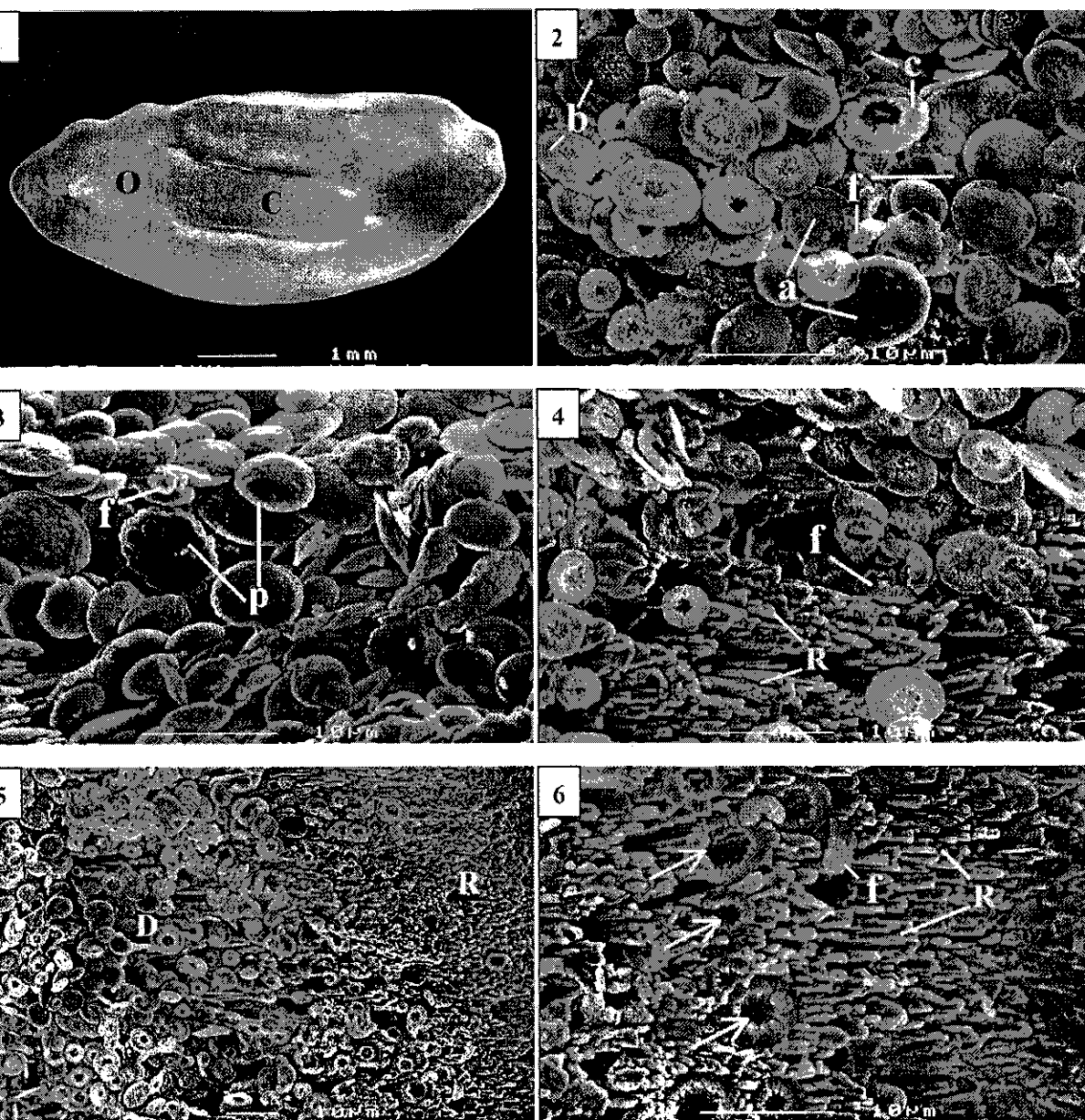


Fig. 1 Sagitta of *M. cirreus*, ostium (O) and cauda (C) of sulcus, bar = 1 mm.

Fig. 2 Disc-shaped crystals in ostium, type I (a), II (b) and III (c) and some fragments (f), bar = 10 μm.

Fig. 3 Disc-shaped crystals in cauda, showing layers and patches (p) on surface of type I crystals bar = 10 μm.

Fig. 4 Rod-shaped (R) and disc-shaped (D) crystals in ostium, bar = 10 μm.

Fig. 5 Transitional zone between disc-shaped and rod-shaped crystals, bar = 10 μm.

Fig. 6 Fusion of rod-shaped and disc-shaped crystals (arrow), bar = 10 μm.