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Translational Research and Innovation in Human and Health Sciences

2nd International Congress of CiiEM

The statoliths of *Catostylus tagi*, chemical characterization by energy dispersive X-ray spectroscopy.

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Introduction: In recent years, marine organisms of the phyla Chordata, Mollusca and Cnidaria have been proposed as models for the study of drug ototoxicity. McAfee and co-authors [1] successfully used live ephyras of *A. aurita*, raised in artificial sea water at 24ºC, to look for a relationship between the antibiotic gentamycin and changes in mobility patterns due the destruction of hair cells. The scyphozoan *Catostylus tagi* (Fig. 1), native to the estuaries of the Tagus and Sado, has been studied for health application purposes [2]. In order to start the studies of *C. tagi* as a model in ototoxicity tests, the chemical nature of its statoliths was determined as described for other cnidarians [3].

Fig. 1. C. *tagi,* medusa stage.

Materials and Methods: *C. tagi* exemplars were collected at Tagus estuary in September 2016. At Egas Moniz laboratory, the bell margin was separated from the rest and stored at – 80ºC (Fig. 2 left). Before spectroscopy, the crude and solvent-free sample was spread on a glass slide and allowed to air dry at -20 °C (Fig. 2 up). Samples were coated with a carbon thin film and then analysed on a FEG-SEM, JEOL 7001F with Oxford INCA light elements EDS detector and EBSD detector.

Fig. 2. Left: whole bell margin. Up: zoom to rhopalia in bell margin; arrow points to statoliths.

Results and Discussion: Statoliths crystals of *C. tagi* were unequivocally identified as a calcium sulphate compound (background spectra confirmed the absence of calcium and sulfur) (Fig. 3). As far as we know, this is the first characterization for a specimen of Catostylidae family. Until now, all the crystals of sensory equilibrium have been found to be calcium compounds, such as $Ca_5(PO_4)_3(OH)$ (sea lamprey), $MgCaPO_4$ (leptomedusae, hidrozoans), carbonates (humans, most fish, molluscs), and sulfates (scyphozoans) [4].

Conclusion: Further studies on the crystalline structure and hydration degree of *C. tagi* statoliths are planned to be performed by X-ray diffraction and micro-computed tomography.

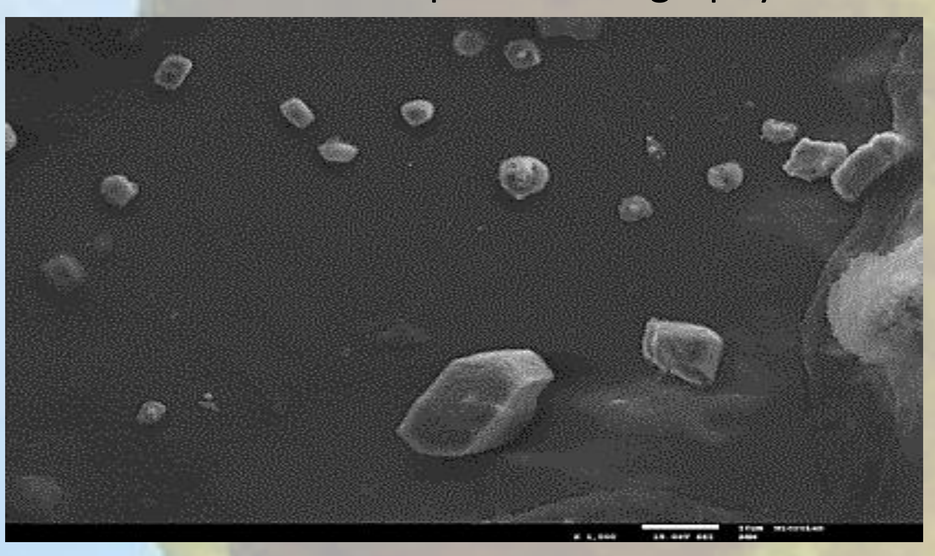

Fig. 3. Left: SEM of *C. tagi* statoliths crystals, scale bar 10 µm. UP: EDS spectrum of the largest crystal.

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Acknowledgements: This study was funded by Egas Moniz Coop Ensino Superior CRL, project EM-ZM 03/04.

Background photo by Henrique Nascimento