

# Study On Shapes of Ossicles and Presence in The in The Muscular Part of *Ophioplocus Imbricatus* (Muller & Troschel, 1842) From the Coastal Waters of Pakistan

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## ABSTRACT

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Brittle stars represent the exclusively marine and high diverse class Ophiuroidea and are usually distributed in most of the shallow-water habitats and are also prevailing in deeper parts of the sea. The Ophiuroids body and arms are maintained by internal calcium carbonate plates that appeared as vertebrae and commonly known as vertebral ossicles. These ossicles are inter-connected and moved through a set of muscles and linked within ball-and-socket joints.

**Keywords:** Ossicles, *Ophioplocus imbricatus*, phylogenetic, taxonomic study,

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## INTRODUCTION

Echinoderms can be evident for a variety of body forms and Ophiuroidea are one amongst them. Ophiuroidea are commonly recognized as brittle stars due to flimsy nature of their arms and dwelling in almost all the regions of the world oceans (Balinsky, 1957, Dupont et al., 2001). Brittle stars are similar in general appearance to sea stars (Asteroidea) and both belong to the Asterozoa clade. However, distinct difference is the presence of whippy arms. The morphology of class Ophiuroidea follows the radial symmetry and mobile form of Deline et. al. (2020). *Ophioplocus imbricatus* (Muller & Troschel, 1842) is a species of echinoderms in the family Hemieuryalidae. These brittle stars also have a particular endoskeleton made up of **vertebral ossicles**, which bear a resemblance to true vertebrae by way of ball socket joints, to support their arms during speedy movement. Simple muscles allow the arms to move. Each skeletal unit (ossicle) usually consists of two parts, a living tissue (stroma) and a complex lattice (stereom) of mineral calcium carbonate, or calcite, which is derived from the stroma.

## OBJECTIVES

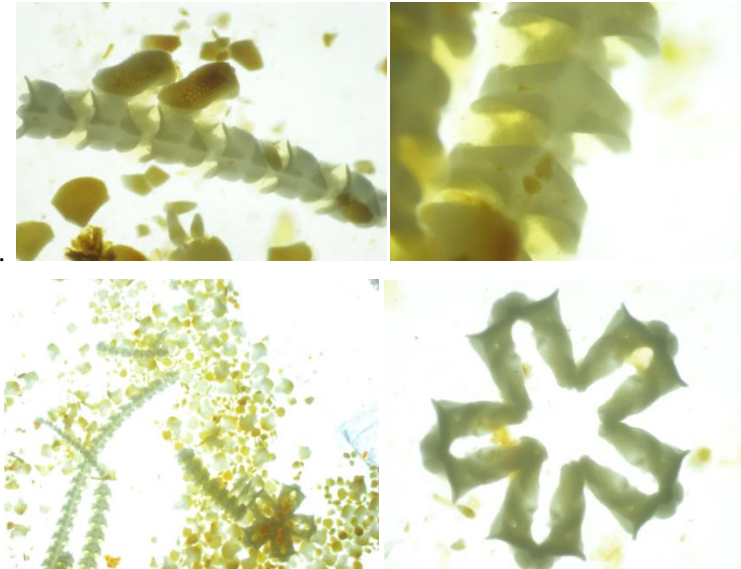
The current study focused on taxonomic characterization of the *ophioplocus imbricatus* with the help of calcareous parts (Ossicles) present within the muscles.

## MATERIALS AND METHODS

Sampling was randomly done by seasonal low tide from sandy shore of Buleji station. Then, samples were counted, measured and identified for their spatial and temporal variability were investigated. For ossicles study 15% KOH solution was used to dissolve muscular parts of body after overnight digestion ossicles are visible. Ossicles were observed under the microscope and Photographs were taken.

## RESULTS

The structural characterization of ossicles from the central disc and arms of brittle star species *Ophioplocus imbricatus* was analyzed and found in multiple numbers, forms and arrangements. The five U shape ossicles with marginal spines were evident as arranged in circular central disc (Fig.1). Each ossicle is formed from granules in the dermal layer that, after secretion from special lime-secreting cells, enlarge, branch, and fuse to build up a three-dimensional network of calcite in endoskeleton and provide inflexibility and safety. Parts of the skeleton enlarge as an animal grows, and desorption and regeneration of the skeleton may occur. In this study I examine that there is different shapes and sizes present in the muscles.



**Figure 1.** The ossicles arrangement and distribution in *Ophioplocus imbricatus*

## CONCLUSION

This study provides the role and significance of the ossicles, the endoskeleton in species identification, growth and regeneration studies of Ophiuroidea as potentially applicable information for characteristics systematic, biological and phylogenetic studies.

## ACKNOWLEDGMENT

This work is supported by Higher Education Commission (HEC) of Pakistan, through grant NRP to NUS which is highly acknowledged.

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