

MORPHOLOGY AND ELEMENTAL ANALYSIS OF LEECHES COCOONS USING SEM-EDS

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Some leeches during reproduction produce cocoons, which are similar to sacks. This capsule protects from drying out, also provides a microenvironment necessary for embryonic development. Leeches secrete various cocoon types depending on constraints imposed by environmental pressures and developmental strategies. For example, mechanically strong, hard-shelled cocoons are abandoned by the parent worm, leaving embryos to develop independently on nutritive cocoon fluid, meanwhile gelatinous cocoons are worn on the ventral side of the body until juveniles are born [1].

The purpose of this research is to analyse morphological and chemical composition differences in different species leeches cocoons.

We examined cocoons from three leech species (i.e., *Erpobdella octoculata*, *Piscicola geometra*, and *Haemopsis sanguisuga*). The unique structure was studied using several techniques – Electron Dispersive Spectroscopy (EDS) and Scanning Electron Microscopy (SEM). The last method allowed to see ultrastructural patterns on the surface of cocoons. Electron Dispersive Spectroscopy results were obtained from the cocoons wall. This analysis disclosed the chemical composition and percentage distribution of the elements. These elements were identified by the energy at which peak counts were detected. Based on primary data, carbon, oxygen and calcium prevailed in all samples, whereas magnesium, nitrogen, phosphorus, sulfur, and silicon were found in smaller quantities. There is a slight difference in the elemental composition and percentage of incidence between the surface and the inside of the cocoons wall.

Therefore, different species of leeches produce cocoons of varying shapes, sizes, and structures, which can help in species identification.

[1] A. M. Rossi, W. M. Saidel, C. J. Gravante et al., Mechanics of cocoon secretion in a segmented worm (Annelida: Hirudinidae). *Micron* 86, 30–35 (2016).