



Mar 07, 2025

Development and validation of a static in vitro digestion system for *Octopus maya*

DOI

<https://dx.doi.org/10.17504/protocols.io.dm6gp92z5vzp/v1>

Daisy Pineda-Suazo¹, Carlos Rosas¹

¹Unidad Multidisciplinaria de Docencia e Investigación. Facultad de Ciencias, Universidad Nacional Autónoma de México. Puerto de abrigo s/n, Sisal, Yucatán, México. C. P. 97356



Daisy Pineda-Suazo

Universidad Nacional Autónoma de México

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.dm6gp92z5vzp/v1>

Collection Citation: Daisy Pineda-Suazo, Carlos Rosas 2025. Development and validation of a static in vitro digestion system for *Octopus maya*. protocols.io <https://dx.doi.org/10.17504/protocols.io.dm6gp92z5vzp/v1>

License: This is an open access collection distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

We use this collection and it's working

Created: January 20, 2025

Last Modified: March 07, 2025

Collection Integer ID: 118837

Keywords: Octopus maya, Enzyme activity, Gastric juice, Cephalopod digestion, In vitro digestion system, digestion system for octopus maya, cephalopod gastrointestinal simulation system, digestive physiology in octopus maya, advancements in cephalopod culture, physiological digestion, digestion system, protein digestion value, cephalopod culture, protein digestion, digestive physiology, using gastric juice, significant differences in protein digestion, understanding digestive process, diet formulation, optimizing diet formulation, octopus maya, vivo trial, traditional in vivo method, novel in vitro model, vivo method, sustainability in aquaculture, vitro model, aquaculture, protein, vivo

Funders Acknowledgements:

Secretaría de Ciencia, Humanidades, Tecnología e Innovación

Grant ID: PRONAI-2024-70

Universidad Nacional Autónoma de México

Grant ID: PAPIIT IN203022

Universidad Nacional Autónoma de México

Grant ID: PROGRAMA DE BECAS POSDOCTORALES

Abstract

The Cephalopod Gastrointestinal Simulation System (CGSS) was developed and validated as a novel in vitro model to study digestive physiology in *Octopus maya*. This system replicates physiological digestion using gastric juice from *O. maya* and offers an ethical, cost-effective alternative to traditional in vivo methods.

The CGSS demonstrated high concordance with in vivo trials, with no significant differences in protein digestion ($p > 0.05$). For instance, protein digestion values were 0.567 ± 0.012 mg/mL (in vitro) and 0.562 ± 0.035 mg/mL (in vivo), confirming the system's reliability. The CGSS provides a practical tool for optimizing diet formulations, including the use of alternative, sustainable ingredients. By reducing reliance on live animals, the system aligns with ethical research practices and promotes sustainability in aquaculture. This innovative model supports advancements in cephalopod culture, offering reliable, scalable solutions for improving productivity and understanding digestive processes in *O. maya* and other species.

Files

 SEARCH

Protocol

NAME

Protocol for anesthesia and euthanasia in Octopus maya

VERSION 1

CREATED BY



Daisy Pineda-Suazo
Universidad Nacional Autónoma de México

OPEN →

Protocol

NAME

Chyme sampling from the digestive tract of Octopus maya

VERSION 1

CREATED BY



Daisy Pineda-Suazo
Universidad Nacional Autónoma de México

OPEN →

Protocol

NAME

Overview static in vitro simulation system of the digestive process in Octopus maya

VERSION 1

CREATED BY



Daisy Pineda-Suazo
Universidad Nacional Autónoma de México

OPEN →