14.2.1. Freshwater Ecosystems (Community Outreach)

2023–2024

Fisheries Technology Program (Undergrad)

The department specializes in marine navigation education for fishing vessels and the design of fishing equipment. It prepares graduates to work as watchkeeping officers responsible for navigation surveillance (after fulfilling the ministerial requirements for practicing the profession), fisheries observers on fishing vessels, or fishery managers in fishing ports. The program is aligned with the requirements of the STCW-F International Convention of 1978, its 1995 amendments, and the standards set by the International Maritime Organization (IMO). Students are provided with marine uniforms, and marine exercises can be conducted in regional and international waters.

College of Fisheries Technology & Aquaculture Technology (aast.edu) on AASTMT webpage

Master of Science (MSc) in Sustainable Management of Fisheries and Aquaculture (SMFA), funded by the EU (Erasmus+ project) (Postgrad)

Master of Science in Sustainable Management of Fisheries and Aquaculture (SMFA), funded by the EU (Erasmus+). The M.Sc. students participated in the student mobility and exchange program as part of the EU-funded FishAqu project under the Erasmus+ program. They visited the University of Aveiro and the University of Palermo from May 8 to 17, 2022.

Many candidates enrolled during the first admission year, 2023-2024 (Thesis one).

College of Fisheries & Aquaculture Technology (aast.edu) on AASTMT webpage
EU-funded project FishAqu of Erasmus+ student mobility on facebook

Guiding the Selection of Graduation Project Topics within the Relevant Specializations

The College of Fisheries and Aquaculture Technology at the Arab Academy for Science, Technology, and Maritime Transport participated in the Academy's Industry Advisory Council activities at the main headquarters in Abu Qir under the theme: "Artificial Intelligence and the Future of the National Industry," held on Tuesday, May 16, 2023. Students from the college presented their graduation project titled: "Potential Application of Chitosan Nanoparticles Extracted from Marine Shrimp Shells as Preservatives for Fishery Products." It is worth noting that they also published a paper based on their graduation project titled: "Potential Application of Chitosan Nanoparticles as a Preservative Agent for Fishery Products."

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Potential Application of Chitosan Nanoparticles as Preservative Agent for Fishery Products

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ABSTRACT
Given its superior bioactivities and biocompatibility, chitosan (CS), a natural polymer that is biodegradable and nontoxic, is widely used in food and biomedical industries. The presence of anionic elements is required to achieve the superior gelling characteristic of CS, which is attributable to its polycationic nature. Additionally, compared to the free form, the chitosan nanoparticles (CSNPs) enhanced bioactivities, such as antioxidant and antibacterial activities and improved stability during storage and continuous release. This study attempted to explore the main uses of CSNPs as a fish preservation agent for *Sardinella aurita*. Antimicrobial activities of CS and CSNPs were tested against *S. aureus* and *E. coli*. Moreover, CS and CSNPs were sprayed over two fish groups, with a third group left untreated (control group). Results delineated the significant antibacterial potential of CSNP compared to CS and control (Gentamycin). Additionally, compared to the CS and control groups, the fish exposed to CSNPs had higher organoleptic indices in their eyes, gills, mucus, flesh, texture and smell. Conclusively, the spray made from shrimp shell waste as CSNPs has good antibacterial and preservation properties. When processing or transporting fisheries products, CSNPs might work as an antibacterial agent and a natural preservative.

INTRODUCTION

Most fishermen have long used synthetic preservatives such as formaldehyde to preserve unsold catches. Given its technical advantages of being simple to get, affordable and useful, formaldehyde is justified for use in preserving fresh fish **(Utama *et al.*, 2021)**. According to the Regulation of the Minister of Health No. 33 of 2012 concerning food additives, formaldehyde is a preservative with dangerous adverse effects. Formaldehyde is a carcinogenic and mutagenic chemical that can cause cell and tissue damage **(Desvita *et al.*, 2020)**. People also frequently use borax in addition to formaldehyde. Borax is a white, odorless, crystalline chemical that is soluble in water **(Xie *et al.*, 2017)**. It is frequently misapplied as a food additive to enhance the flavor and longevity of food products **(See *et al.*, 2010)**. It is typically used as a preservative, antiseptic and cockroach repellant. Therefore, a substitute for synthetic preservatives in the form of natural

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Postgraduate Programs related to Sustainability

The Maritime Postgraduate Studies Institute (MPI) is the leading institution offering top maritime postgraduate programs that support researchers across various sectors of the maritime industry at local, regional, and international levels. MPI maintains a competitive edge and cultivates a rigorous scientific environment that helps develop students' skills and abilities in research. Furthermore, it cultivates a new generation of specialists and researchers capable of addressing the industry's current and future needs, guiding research topics toward contemporary industry concerns, such as marine environmental research and the sustainability of aquatic ecosystems, and aligning with the UN SDGs.

Postgraduate Programs related to Sustainability on AASTMT webpage