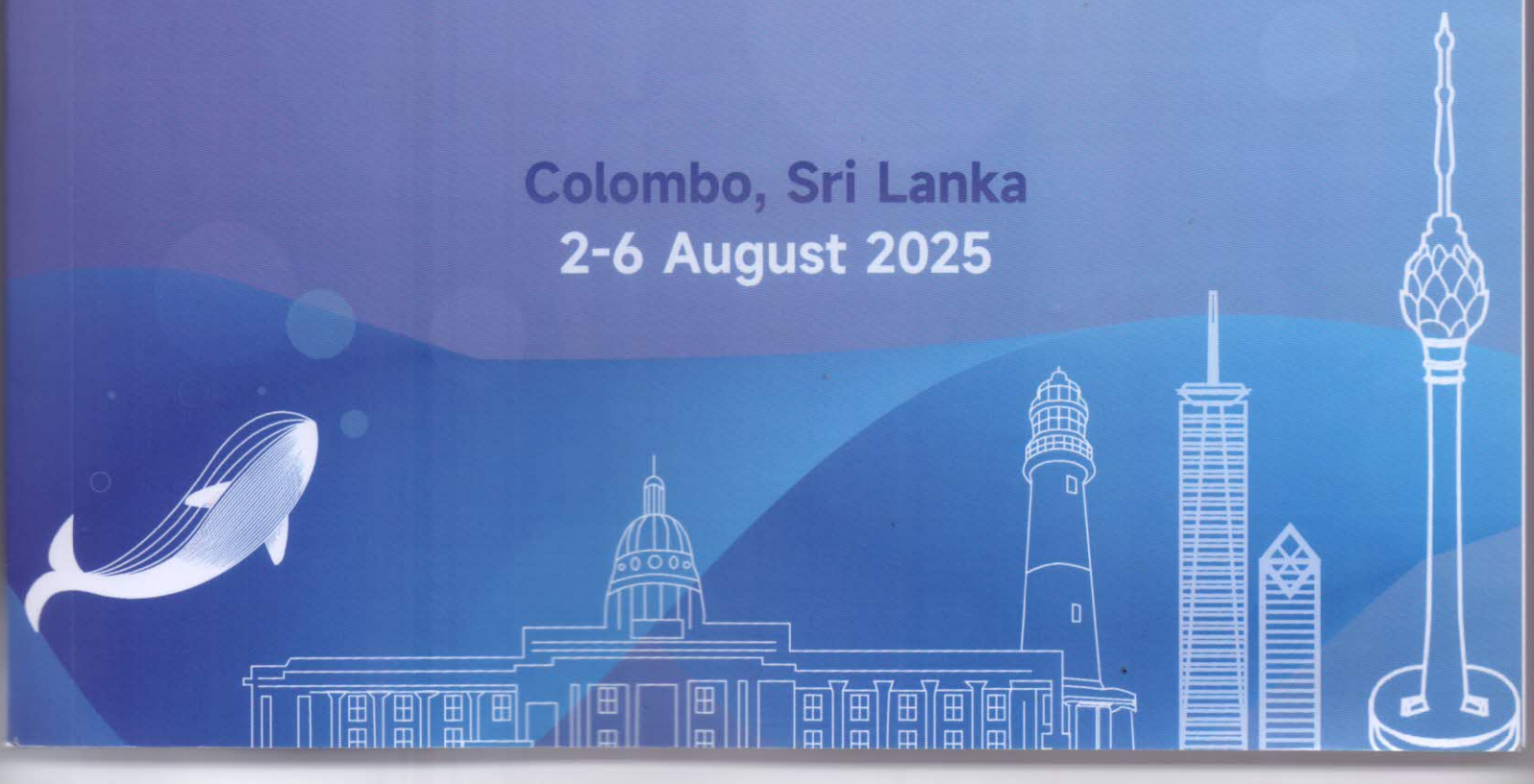
# 2025-ICSDMBR

## INTERNATIONAL CONFERENCE ON THE SUSTAINABLE DEVELOPMENT OF MARINE BIO-RESOURCES

# CONFERENCE GUIDE

Colombo, Sri Lanka

2-6 August 2025



# Exploring digestive enzyme inhibitory properties of five edible leafy plants of Sri Lanka

Nazrim Marikkar*, Savani Ulpathakumbura, Lalith Jayasinghe

National Institute of Fundamental Studies, Kandy, Sri Lanka

Email: nazrim.ma@nifs.ac.lk

**Abstract:**

Many types of plants, plant products (fruits and vegetables) and microorganisms such as fungi contain bioactive components which are of benefit to humans. These have been consumed as food and some have been used for medicinal purposes for centuries. In this investigation, five edible leafy plants of Sri Lanka were selected to assess their anti-oxidative, anti-hyperglycemic and lipase inhibitory properties *in vitro*. Plants, namely *Atlantia ceylanica* (Yaki-naran: YK), *Memecylon umbellatum* (Kora-kaha: KK), *Polyscias scutellaria* Fosberg (Koppa: KO), *Premna procumbens* Moon (Le-kola pala: LE) and *Stevia rebaudiana* Bertoni (Stevia: ST) were sequentially extracted with hexane, ethyl acetate (EtOAc) and methanol (MeOH). TPC, FRAP, DPPH and ABTS radical scavenging activities, α-amylase, α-glucosidase and lipase inhibitory activities were assessed *in vitro*. The phytochemical profiling of leafy plants was performed using ultra high-pressure liquid chromatography coupled with mass spectrometry. Out of the five plants, the crude extracts of YK were subjected to purification by column chromatography and PTLC. The furnishing compounds were characterized using NMR, FTIR and mass spectroscopic methods followed by evaluating their bioactivities. Results showed that the highest alpha-glucosidase inhibitory activity was displayed by YK followed by KO. The highest alpha-amylase inhibitory activity was displayed by LE followed by YK. Among all plant extracts, only LE showed a moderate inhibitory activity against lipase. These extracts displayed good antioxidant potential, which correlated well with the enzyme inhibitory activities. This study concluded that the extracts of selected edible leafy plants are a potent source of bioactive compounds that claim various pharmacological properties. The isolated pure compound SAC 4 from crude extracts of YK showed strong α-glucosidase inhibitory activity, moderate antioxidant activities and lipase inhibitory activity.

Professor Nazrim Marikkar is Head of the Food Chemistry Programme at the National Institute of Fundamental Studies, Kandy. He holds a BSc (Hons) in Chemistry from the University of Colombo and a PhD in Food Biochemistry from University Putra Malaysia. He previously served as Senior Lecturer at UPM and Assistant Professor at the International Islamic University, Malaysia. His research focuses on food authentication and functional foods for diabetes mitigation. He has secured competitive grants from CARP Sri Lanka and Malaysia's Ministry of Higher Education, supervised one PhD and nine master's students, and published over 80 peer-reviewed articles, along with a book, seven chapters, and 50+ conference papers. His H index is 25 for over 2100 citations. He serves on the editorial board of Letters in Food Research and has won numerous awards including the Sri Lankan Presidential Award for Scientific Research.