



FTIR Spectroscopy and Antimicrobial Peptide (Enterocin) Profiling of Probiotic Enterococci for Food and Biotechnological Applications

Abrar Hussain and Syed Abid Ali*



International Center for Chemical and Biological Sciences, H.E.J. Research Institute of Chemistry University of Karachi, Karachi Pakistan (*e-mail: abid.ali@iccs.edu)

Introduction

- Probiotics are live microorganisms that, when administered in adequate amounts, confer health benefits to the host.
- Microorganisms with certain selection criteria are used as probiotics, which hold significant potential in the food and biotechnology industries.
- Among them, Enterococci, Gram-positive microbes with ubiquitous distribution, are of particular interest due to their industrial applications and ability to produce antimicrobial peptides known as enterocins.
- These bacteriocins exhibit potent activity against foodborne pathogens, offering natural preservation solutions and alternatives to antibiotics.
- Studies have revealed that FTIR spectroscopy can be employed for the specific peak identification and characterization of probiotic microorganisms.

Objective & SDG

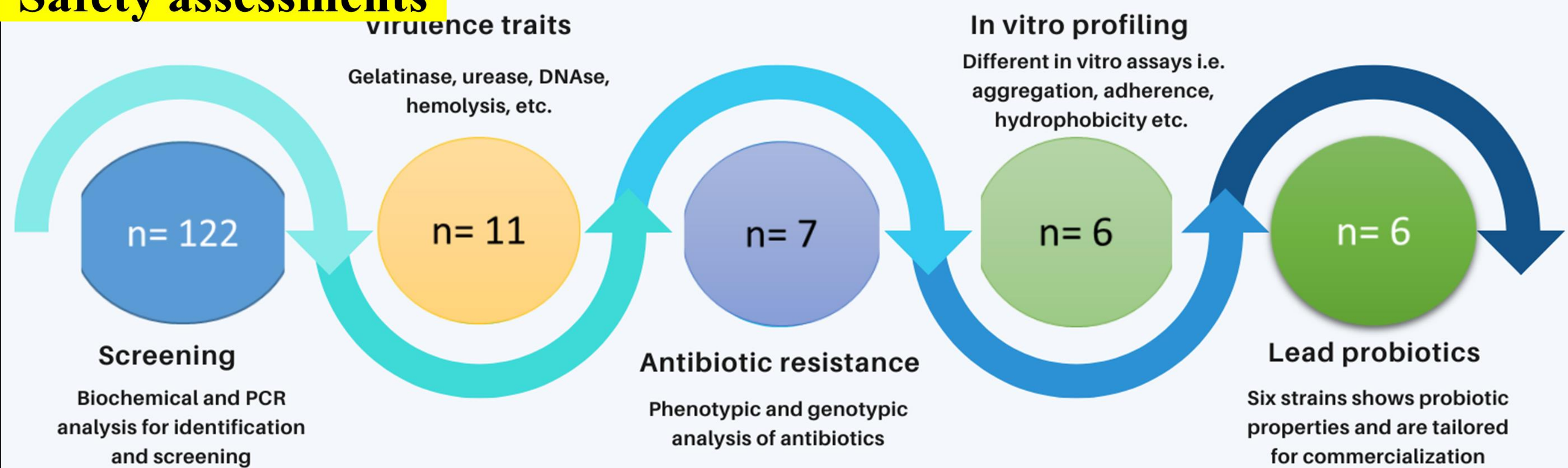
1. To evaluate enterocin production in the selected locally isolated *Enterococcus faecium* strains

2. To detect enterocin genes via molecular genotyping (PCR)

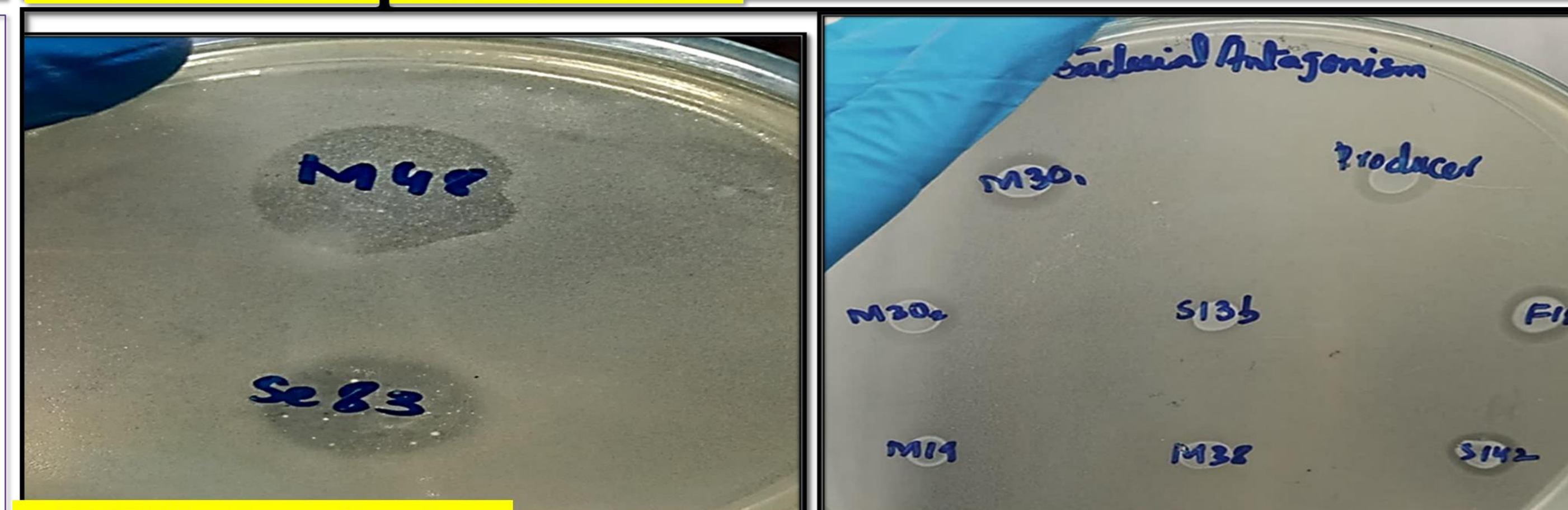
3. To conduct ATR-FTIR analysis for probiotic profiling



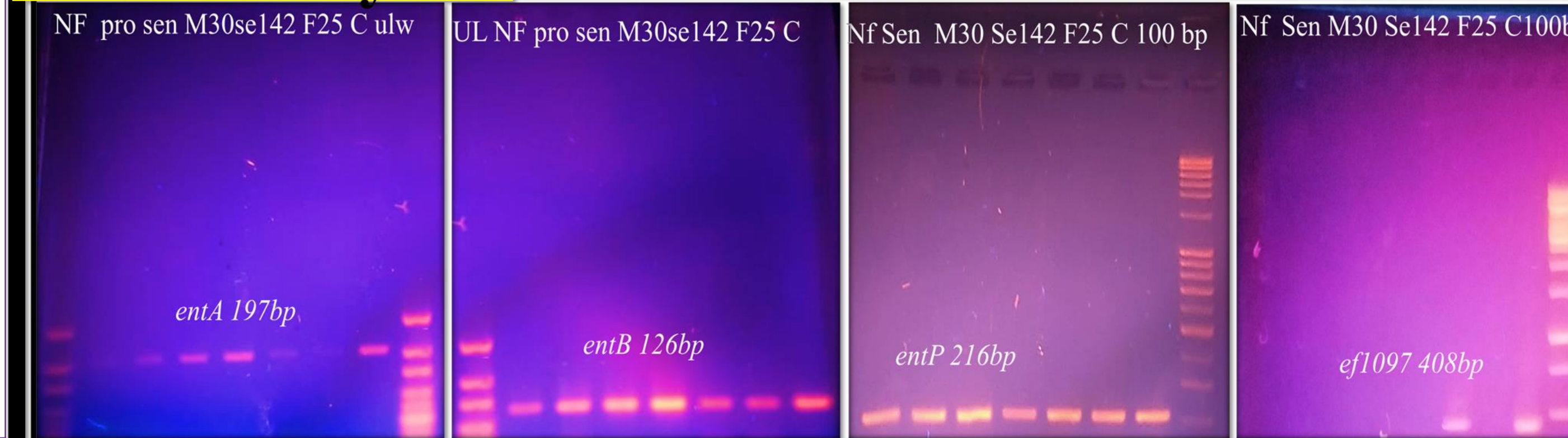
Safety assessments



Enterocin production

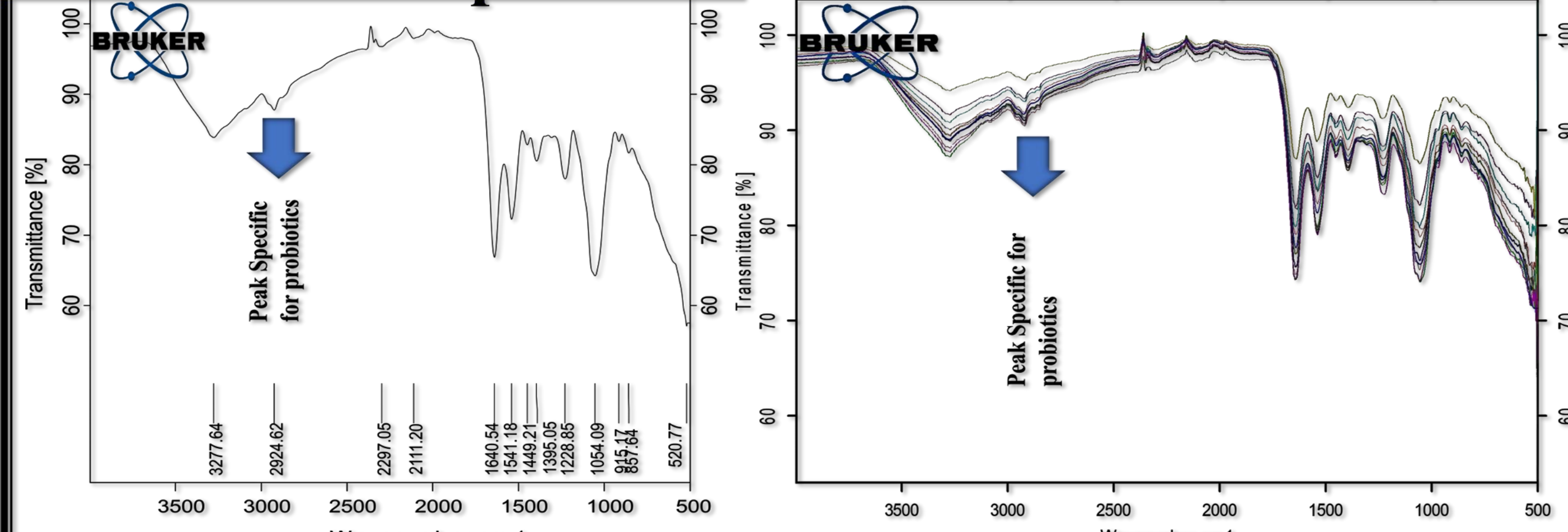


PCR Analysis

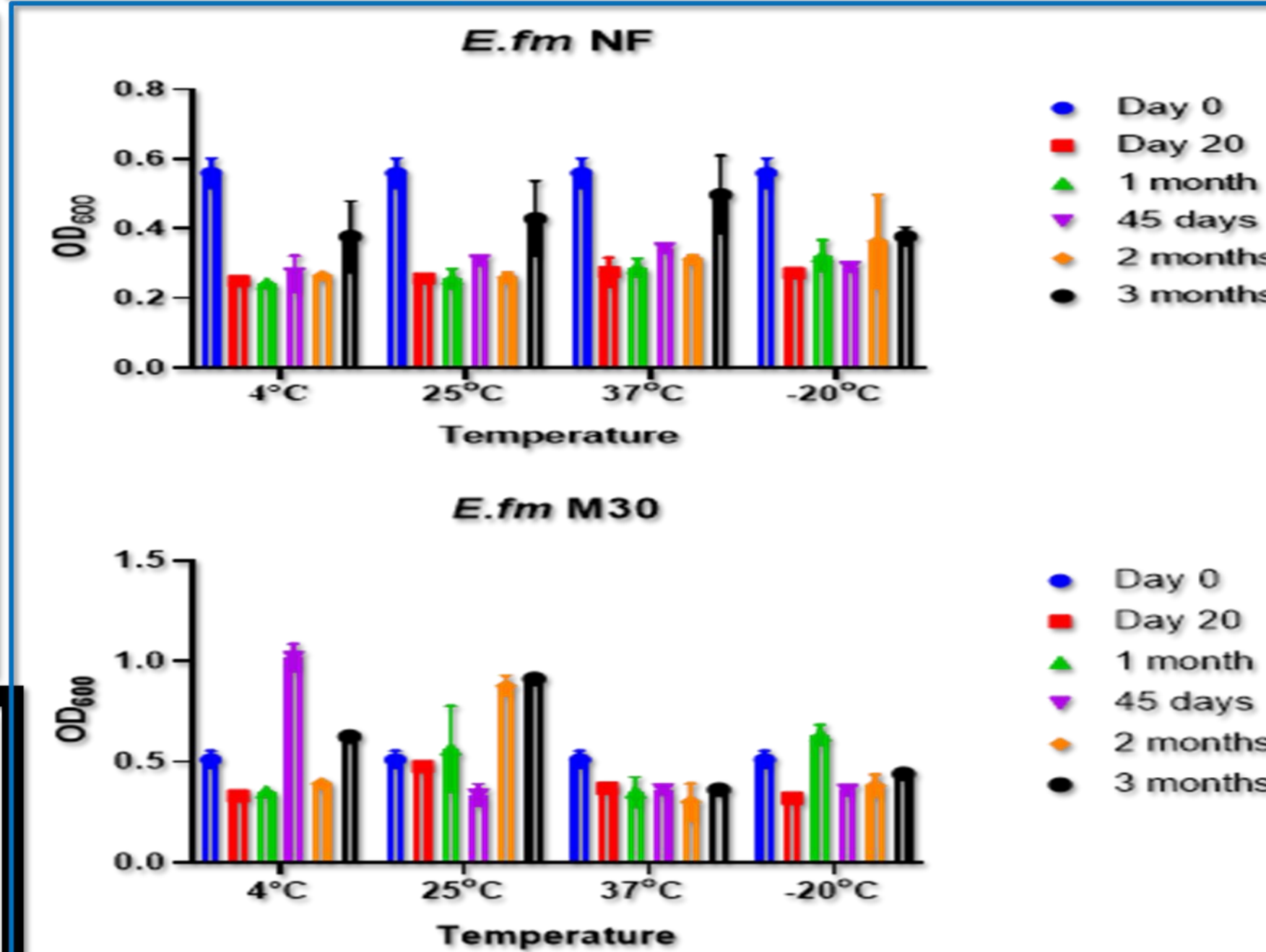


Strains	entA	entB	entP	entQ	entL50
E.fm NF	+	+	+	+	-
E.fm TWC-ST1	+	+	+	+	+
E.fm M-30	+	+	+	+	+

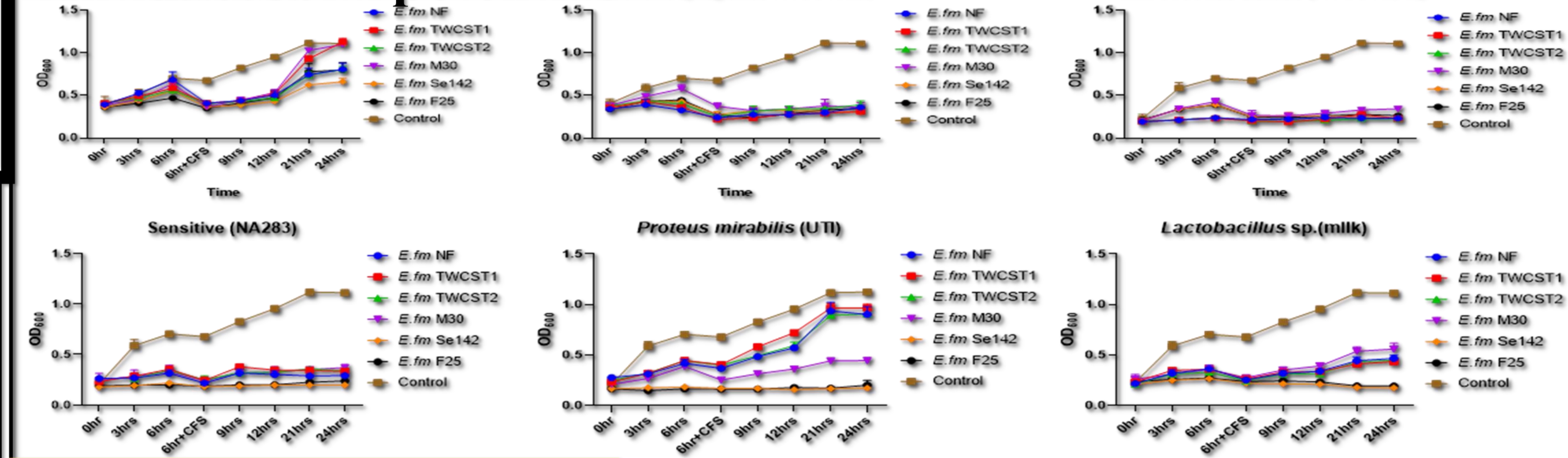
ATR-FTIR Spectra



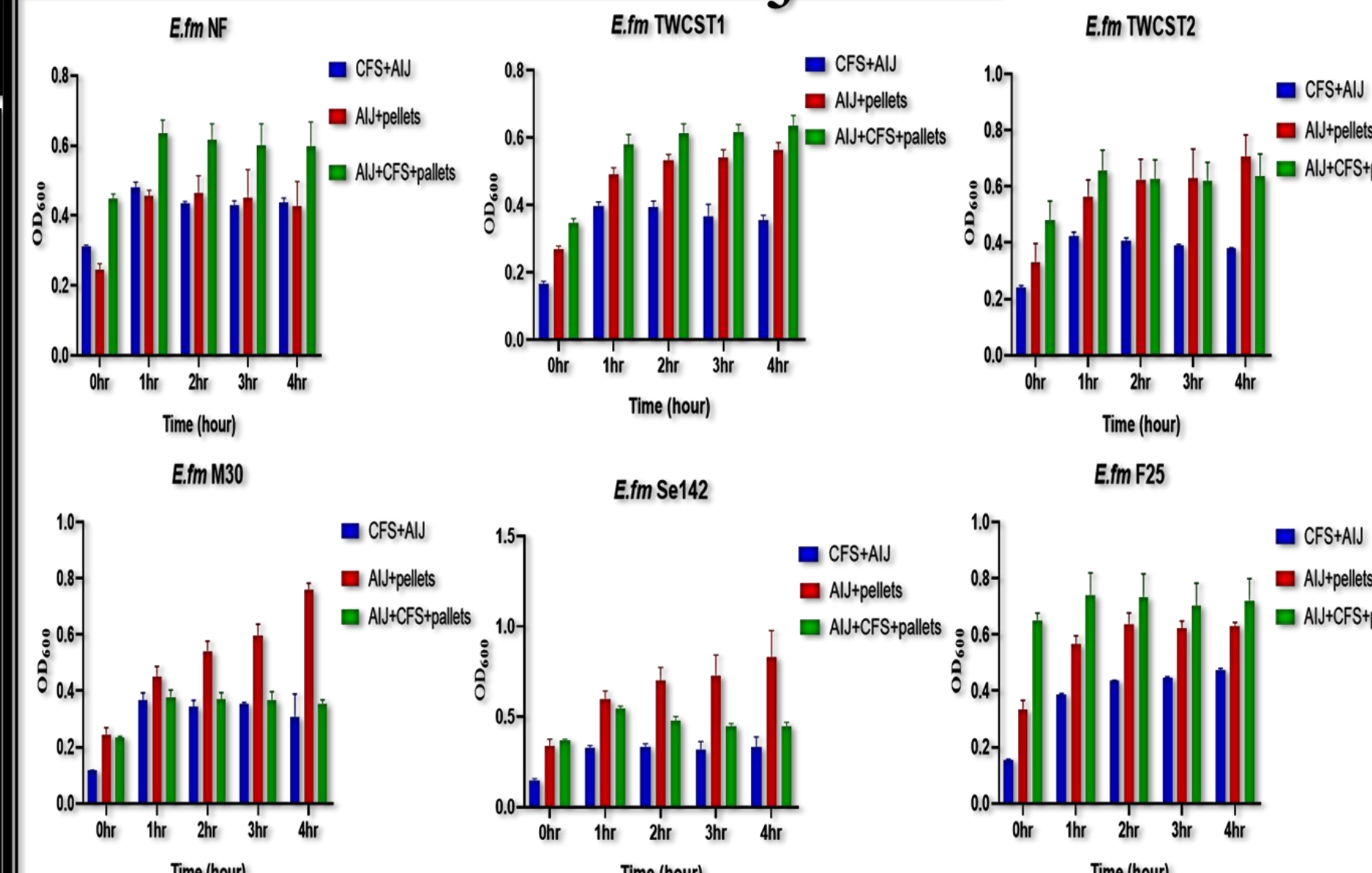
Shelf life



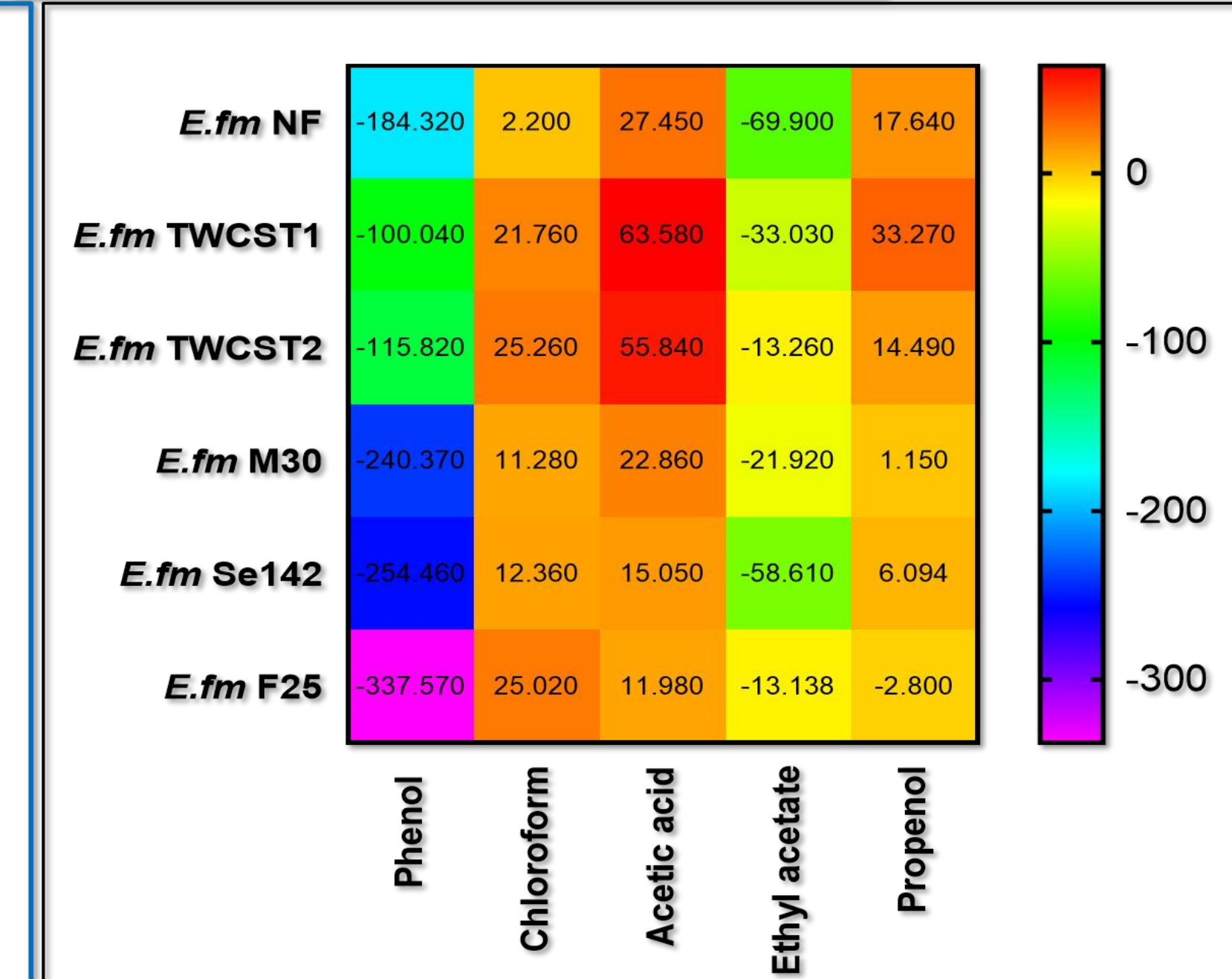
Antimicrobial potential



Artificial intestinal juice



Microbial adhesion



Heat tolerance

