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For the export of fish or seafood commodities to EU countries the European Union council has laid down common marketing standards for fishery products. The major share of Indian export to EU countries is unprocessed and marketed chilled or frozen. Their quality is mainly determined by the freshness which is assessed by sensory and organoleptic examinations. The present study is based on the objective of developing pictorial guidelines depicting the freshness of seafood commodities on the basis of different freshness indicators. Under the study, freshly landed cephalopods and finfish species *Octopus vulgaris*, *Sphyræna jello*, *Trichiurus lepturus*, *Pampus argenteus*, *Chirocentrus dorab* were collected from landing center and brought to the laboratory under iced condition and stored at 2^oC (chilled storage). The seafood samples were evaluated daily for its quality and categorized as per EC regulations like extra fresh, A or B on the basis of organoleptic examinations viz. Skin color, pigmentation, color of mucus, shape and colour of the eyes, colour of peritoneum, colour of gills, firmness of flesh, odour etc.. The organoleptic parameters were then validated with different biochemical indices like pH, TMA, TVB-N, TBA, etc. The visual changes in quality indicators are also documented in pictorial forms. The result of the organoleptic study reveals that most of the species studied remains extrafresh under chilled condition for 2-3 days and gradually quality shifts from A to B grade on 3rd to 5th day. The biochemical indices is also in agreement with the sensory and organoleptic

observations. The final outcome of the study is a systematic pictorial guideline of sensory qualities of finfish and cephalopods which can be used as a reference for policy makers and stakeholders.

SF PO 32

Comparison of phenotypic and genotypic methods for characterization of MRSA isolated from seafood and aquatic environment

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Methicillin resistant *Staphylococcus aureus* is generally regarded as significant pathogen of clinical importance. Numerous methods have been developed and employed for the characterizing or sub-typing of MRSA from human and animal infections. However, there are limited studies on comparison of different methods for differentiation of strains of MRSA from seafood and aquatic environment. In this study various typing methods were employed to evaluate their discriminatory power to differentiate on 65 MRSA isolated from seafood and aquatic environment by calculation of the index of discrimination (D). The methods employed included antibiotic resistance pattern, virulence factors profiling (VF profiling), accessory gene regulator typing (*agr* typing), staphylococcal cassette chromosome *mec* element typing (SCC*mec* typing), staphylococcal protein A typing (*spa* typing) and multilocus sequence typing (MLST). The study revealed that the antibiotic resistance profiling had the highest discriminatory index (D) of all methods

($D=0.89$), followed by virulence profiling ($D=0.80$), *spa* typing ($D=0.77$), MLST ($D=0.75$), *SCCmec* typing ($D=0.66$) and *agr* typing ($D=0.44$). The study emphasise the use of combination of several methods for improving the efficiency of discrimination of MRSA isolates from this region. The use of combination of the typing method depends on the strain populations present in a given geographical locations and their clonality. Based on this study it can be concluded that *spa* or MLST in combination with the virulence or antibiotic resistances profiling produced the highest discriminatory power for typing of MRSA isolated from seafood and aquatic environment.

SF PO 33

Molecular characterization and evaluation of antibiotic susceptibility and biofilm forming capacity of pathogenic *Escherichia coli* isolated from seafood

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The present study made an attempt to investigate the occurrence of pathogenic *E. coli* in seafood, its antimicrobial susceptibility patterns and the biofilm forming capacity. In the present study, 43 seafood samples collected from commercial markets of Cochin were screened for the presence of pathogenic *E. coli*. The 21 biochemically confirmed isolates were further confirmed by PCR using various gene specific primers. The PCR results revealed that out of 21 isolates screened for the presence EIEC, EPEC, ETEC and EHEC strains of *E. coli*, only one isolate from fish sample (ECF5)

showed positive results for *rfbE* gene of EHEC strain with a specific band of 213 bp on agarose gel. Antibiotic susceptibility pattern of the isolates revealed that 90% of the (19 strains) isolates were found to be multidrug resistance to more than 5 antibiotics, whereas all the isolates (100%) showed sensitivity to doxycycline, naladixic acid, and azithromycin. The MAR index of all the isolates was found between 0.2 and 0.5. Even though all the isolates exhibited complete resistance to trimethoprim with no MIC level, the MIC observed for ciprofloxacin and for polymyxin-B and gentamicin was 0.016mcg/ml and 128 mcg/ml, respectively. Out of the 15 moderate biofilm forming *E. coli* obtained, 2 of them exhibited maximum multidrug resistance to more than 7 antibiotics whereas remaining 13 isolates showed multidrug resistance to 4-5 antibiotics. Hence this study revealed the emergence of antibiotic resistance in biofilm forming *E. coli* in seafood from Cochin markets, which may pose future threat to develop control strategies in the fish processing industry and also pose significant treatment challenge to physicians.

SF PO 34

Assessment of microbiological quality of fish from rivers Ganga and Mandakini

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Bacteria are ubiquitous in the aquatic environment. Water-borne disease continues to pose a major threat to public health, both in the developed and developing