

**SF PO 24**

**Biochemical and microbial quality of cured fishes from small scale curing units of Cochin, Kerala**

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Curing of fish is a traditional and economical method of fish preservation preferred in rural areas. A considerable quantity of cured fish marketed in Cochin is coming from local small scale curing units. But the quality of these cured products can be deteriorated biochemically and microbiologically due to the usage of poor quality raw material, inadequate curing procedures, unhygienic handling and improper storage conditions etc. In this background, a study was carried out to evaluate the biochemical and microbial quality of cured fish produced in small scale curing units of Cochin, Kerala. A total of forty-four number of cured fish samples coming under seventeen varieties were collected and evaluated. The cured fish included directly sundried products without salting, salt dried products and wet cured products. Biochemical parameters such as water activity, moisture, ash, sand, salt, TVBN and TMA and microbiological parameters such as aerobic plate count, total fungal count and coagulase positive *Staphylococcus aureus* count were assessed. Water activity of the samples ranged from 0.48 to 0.82 and 6.81% of samples exceeded the value of 0.78. Moisture content of samples was varying and 22.73% of samples contained moisture content above 40%. 26.67% of salt cured samples contained salt content less than 12%. Sand content above 1% was observed

in 40.9% of samples with highest in case of Mackerel (4.07%). TVBN content ranged from 84 and 273 mg% and TMA from 28 and 210 mg%. Aerobic plate count (APC) of cured fish samples were ranging from 3.04 to 7.02 log CFU/g, and in 47.7% of samples which was above 5 log CFU/g. Presence of coagulase positive Staphylococci was detected in three of the samples evaluated under study. Total fungal count in 68.2% of cured fish samples was above 2 log CFU/g.

**SF PO 25**

**Gold nanoparticle based smart packaging for differentiating fresh and frozen fish**

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Fresh and refrigerated fish are highly preferred form of fish as it preserves natural culinary properties. Marketing frozen thawed fish as fresh fish is a common ill practice followed in many countries. At present, there is no mechanism to detect this fraud practice by the consumers. Hence, the present work was undertaken to develop a smart packaging device using gold nanoparticles (AuNPs) to distinguish packed fresh fish from frozen variety. Gold nanoparticles prepared under isothermal conditions using trisodium citrate (TSC) were compared with chitosan (0.1 to 0.5% w/v) of four different degree of deacetylation. The developed AuNPs were characterised for UV-visible spectra, FTIR spectra and visible colour changes. The time taken to reduce gold atom to gold nanoparticles varied with the type of reducing agent. The visible colour of the AuNPs prepared using different

reducing agents was ruby red colour and the maximum absorbance ( $\lambda_{max}$ ) was between 517 to 528 nm. AuNPs were exposed to frozen storage condition ( $-20^{\circ}\text{C}$ ) and evaluated for its characteristics. UV-visible spectrum for AuNPs prepared using TSC and lower concentration of chitosan (0.1 and 0.2%) showed a distinctly different broader spectrum with reduced peak intensity. Peak shifting towards right was also observed. This could be due to the aggregation of AuNPs in frozen condition. The ruby red colour of the AuNPs changed to slightly greyish upon exposure to frozen condition for TSC and lower concentration of chitosan (0.1 and 0.2%) indicating its application as smart packaging to distinguish packed fresh and frozen fish.

SF PO 26

### Prevalence of *Listeria* spp. from shrimp culture environment in Karnataka

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Shrimp continues to be the largest single commodity in terms of value, accounting for about 15 % of the total value of internationally traded aqua products in 2012. The presence and spread of human pathogens through aquatic food has become a major hazard. Food borne bacterial pathogens are the principle cause of foodborne illness, product rejection and detention in the international market. The bacteria *Listeria* spp. has been implicated in product detention and infections with these bacteria are currently associated with fatality worldwide. *Listeria* is Gram positive, non-spore forming, facultative anaerobic and

psychrotrophic bacteria that are widely distributed in nature. The bacteria are indigenous to the marine and estuarine environments. In the present study, prevalence of *Listeria* spp. from shrimp culture environment in Karnataka was studied. A total of 151 samples from shrimp culture environment such as shrimp, water, feed and sediment were collected and checked for the presence of *Listeria* spp. Though the *Listeria*-like colonies were isolated from samples, they were proved to be negative when subjected to PCR confirmation. Further, gene sequencing of isolates confirmed the absence of *Listeria*. Hence, the present study presumes that the *Listeria* spp. is not a hazard in shrimp culture environment of Karnataka.

SF PO 27

### Microbial quality assessment of commercially available dried fishes of Gujarat

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The present study was carried out to assess the microbiological quality of traditionally dried and commercially available fish such as Eel (*Congresox talabon*), Croaker (*Otolithes cuvieri*), Gold spotted anchovy (*Coilia dussumieri*), Bombay duck (*Harpodon nehereus*), Greater lizard fish (*Saurida tumbil*), Ribbon fish (*Lepturacanthus savala*), Horse Mackerel (*Megalaspis cordyla*) and Cat fish (*Arius dussumieri*) collected from in and around Veraval fish market, Gujarat during the summer months of March to June, 2016.