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The occurrence of enteric adenoviruses in bivalve mollusks, crustaceans, finfish, and cephalopods, collected from supermarkets, landing centers, and retail fish markets, from different regions of the northwest coast of Mumbai, India was studied to assess the level of fecal contamination of the coastal environment as well as in seafood. Out of the 47 samples analyzed, adenoviruses were detected in ten (21.27%) of the samples, which comprised of 43.75% of clams, 25% of oysters, 8.33% of shrimps, and 9.09% of finfish samples. High prevalence of enteric adenoviruses was observed in clams, followed by oysters and other finfish and shrimp samples. The study reports the first instance of detection of adenovirus from finfishes and shrimps indicating a high level of fecal contamination. The total plate counts of 13 samples (27.66%) were in the range of more than 10^7cfu/g. Most of the samples (48.93%;n=23) had TPC value at 10^6cfu/g, and the total coliform counts of 13 and 21 samples were between 20-100, and 100-300 MPN/100g respectively. Ten of the samples analyzed were found to have fecal coliforms of more than 200 MPN/100g, 29 samples had counts between 20 and 200 MPN/100g and 3 samples had counts of less than 20. *E.coli* was positive for 41 samples (87%) out of 47 samples analyzed.The highest correlation between the bacteriological indicators of quality and presence of adenovirus was obtained in the case of total plate count(r=0.971) followed by total coliforms (r=0.795) and fecal coliforms (r=0.766) respectively.The salient observation from the present study that the samples with high bacterial counts are also positive for adenovirus, throws light on the fact that fecal indicator bacteria can be effectively correlated with the presence of adenovirus and thereby can be used as an enteric viral indicator.

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Development of PCR-RFLP technique for the identification of S*ardinella gibbosa* from various processed fishery products

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Sardinella gibbosa (golden stripped sardinella) caught from Tuticorin coast of Tamil Nadu was identified from other species of sardines viz**.** *Sardinella longiceps***,** *S. albella***,** *S. fimbriata***,** and *S. sirm* by employing PCR-RFLP technique. 3 lots of samples, the raw sardine along with cooked and frozen samples were prepared out of these five samples of sardines. Cooked product was prepared by cooking the sardine samples at 100ºC for 15 min. Frozen samples were prepared by freezing at -40ºC for 24h in ultra-freezer. DNA was extracted from control and processed products followed by the amplification of mitochondrial cytochrome b (*mt cyt b*) gene by using specific primer C-CB285Df and C-CB431R. Mitochondrial gene was amplified at 147bp irrespective for all the sardine species for both control and treatment groups. Amplified gene was subjected to restriction digestion by using two enzymes *HinfI* and *MnlI*. The digested DNA samples were then run on 10% Polyacrylamide Gel Electrophoresis (PAGE) to view the band pattern. The digested band pattern showed similarity in the case of *S. gibbosa,* which yielded 107 bp

and was the unique band pattern for both control and processed samples. Other sardine species yielded almost similar band pattern which was not able to differentiate easily. Hence *S. gibbosa* was identified from other species of sardines, which is one of the major species landed in Tuticorin coast, having a good market demand and export value. So there is a chance of mixing *S. gibbosa* meat with other low value sardine varieties. Hence PCR-RFLP can be recommended as an effective technique and can be used for routine species identification even from the processed fish products.

Impact of different processing methods on retention of oxytetracycline residues in treated tilapia

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Antibiotics used in aquaculture results in deposition of residues in muscle and other tissues of aquaculture species if withdrawal time is not given after administration of drug. Oxytetracycline (OTC) is a primary antibiotic used in the aquaculture industry for the treatment against bacterial pathogen or as prophylactic measure. The antibiotic is usually administered in a form of medicated feed. Antibiotic residues are used to be measured on uncooked tissue. Data on the effect of cooking procedures on antibiotic residues in fish are limited. In the present study the effect of different processing methods like boiling, microwave cooking, frying and drying on retention of OTC residues in treated Tilapia was investigated. OTC residues are considered relatively

unstable compounds. Temperature during cooking has the largest impact on the loss of OTC residues, the more cooking time; the greater will be the loss of residues. The fish was treated with 3 different concentrations of OTC for ten days and harvested after 12h of last feeding. OTC residues retained after different processing methods was determined by LC-MS/MS.

Optimization of phosphate treatment process in shrimp for acceptable residual level

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Seafood industries widely use phosphate dip treatment along with salt to improve the water retention properties of frozen products. Phosphates are GRAS chemical additives with a recommended maximum level of 2,200 mg/Kg in fish and fishery products. Though many combinations are in practise and many researches established different effective combinations, the residue levels were found to be falling out of the limits of regulations. This study optimizes the phosphate dip treatment in *Penaeus indicus* using Response Surface Methodology to get a safe residue level in the final product. Box-Behnken design with four factors, two levels - phosphate concentration (X1- 1 to 5%), salt concentration (X2- 0 to 3%), shrimp to dipping solution volume ratio (X3- 1:1 to 1:3), and treatment time (X4- 30 to 480 minutes) – used to design the experiment. Total phosphorous, weight gain, moisture content, texture and colour properties were investigated as response factors. The suggested models were verified to get a