

convenient foods and it is highly recommended to screen the presence of *C. botulinum* in fish and fish products.

SF PO 36

Biopreservative effect of *Lactobacillus plantarum* for shelf-life extension of *Nemipterus japonicus* mince during chilled storage

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Biopreservation is a natural preservation technique where controlled microbiota of certain Lactic acid producing bacteria and /or its antimicrobial peptides is used for the extension of shelf life as well as enhancement of food safety. In this study, biopreservative effect of *Lactobacillus plantarum* (ATCC 8014) on biochemical and microbiological parameters of *Nemipterus japonicus* (Japanese threadfin bream) mince was assessed. Fish mince was added with 1% glucose. Fish mince (100 g) was packed in sterile polyethylene bags and inoculated with *L. plantarum* of 10⁴ CFU/ml. Samples were stored in chilled condition (2°C). No significant changes were observed for TVBN between control and inoculated samples upto 11th day. Thereafter, a significantly higher TVBN (28 mg%) was observed for control samples compared to only 21 mg% for inoculated samples on 15th day indicating a sign of spoilage for control samples. PV and TBARS values were in the permissible limit in both cases during the entire storage period. There was a decrease of one log CFU/g and 02 log CFU/g in the count of Aerobic Plate Count (APC) and *Pseudomonas* count respectively, and increase of LAB count was found after 3rd

day of storage for inoculated samples. The APC count reached to rejection level on 15th day in the inoculated samples whereas the control became unacceptable on 11th day of storage. Results suggest that *L. plantarum* can be considered as a preservative agent during chilled storage of *N. japonicus* mince to enhance its shelf-life.

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Freshness assessment and grading of commercially important finfishes (*Scomberomorus commerson*, *Etroplus suratensis* and *Sardinella longiceps*) based on pictorial, sensory, biochemical and microbiological evaluation in chilled storage

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European Union insists on sensory grading of fish species prior to export and competent authority of each exporting nation need to have a sensory scheme for grading aquatic species based on freshness. The objective of the study was to evaluate the quality based on sensory grading of three species namely, *Scomberomorus commerson*, *Etroplus suratensis* and *Sardinella longiceps* during chilled storage as per EU scheme (EC Regulation 2406/96). Photographic evidence during the stages of progressive loss of freshness was documented, which was supported by evaluation of incremental changes in biochemical (TVBN, TMA & TBA content), microbiological (mesophilic bacterial count, psychrophilic bacterial count, *Pseudomonas* and H₂S producers count) and gradual loss

of sensory characteristics. Grading to E, A & B was done based on visual observations of eyes, gills, operculum, skin, and overall appearance as well as change in smell. An increasing trend was observed in TBA, TVB-N, TMA and the same has been observed in psychrophilic count, *Pseudomonas* count and H₂S producer count. E grade was noticed up to 2nd day for *Sardinella longiceps* and 3rd day of storage for *Scomberomorus commerson* and *Etroplus suratensis*. A grade was observed until 3rd day for *Sardinella longiceps* and 4th for *Scomberomorus commerson* and *Etroplus suratensis*. Finally, B grade was noticed on 5th day for *Sardinella longiceps* and 6th day for *Scomberomorus commerson* and *Etroplus suratensis*. Above changes were well supported by sensory evaluation of sample. A combination pictorial, sensory, biochemical and microbiological changes was used to develop grading of species studied in chilled storage. Exporters can utilize this data to rate the quality of commercially importance species.

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Freshness assessment and grading of commercially important aquatic species (*Euthynnus affinis*, *Fenneropenaeus indicus*, *Mugil cephalus*) based on pictorial, sensory, bio chemical and microbiological evaluation in chilled storage

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In recent years, there is a substantial increase in export of finfish and shellfish

species to European Union from India, with a share of 16.73% of total seafood export. European Union insists on sensory grading of species at primary production centres and during receipt of raw material by processing establishments. The purpose of the study was to evaluate the quality based on sensory grading of three species namely *Euthynnus affinis*, *Fenneropenaeus indicus* and *Mugil cephalus* as per EU scheme (EC Regulation 2406/96) and develop a pictorial guideline for processors. Grading is done based on sensory parameters (eyes, gills, operculum, skin, smell and overall appearance), images and evaluating biochemical parameters (TBA, TVB-N, TMA) and microbiological parameters viz. mesophilic bacterial count, *Pseudomonas* count and H₂S producer count. Increasing trend in biochemical indices (TBA, TVB-N, TMA) and corresponding increase in microbial count (psychrophilic count, *Pseudomonas* count and H₂S producer count) corroborated with the change in sensory attributes during chilled storage. E grade was noticed up to 2nd day for *Fenneropenaeus indicus* and 3rd day for *Euthynnus affinis* and *Mugil cephalus*. A grade was observed until 3rd day for *Fenneropenaeus indicus* and 4th day for *Euthynnus affinis* and *Mugil cephalus*. Finally B grade was noticed on 5th day for *Fenneropenaeus indicus* and 6th day for *Scomberomorus commerson* and *Etroplus suratensis*. The guidelines can be used by the exporters for compliance with EU requirements prior to export.

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Freshness assessment and grading of commercially important finfishes (*Stolephorus commersonnii*, *Cynoglossus macrostomus* and *Epinephelus malabaricus*) based on