

Isolation and identification of Group B streptococcus (*Streptococcus agalactiae*) from tilapia (*Oreochromis* spp.) fish collected from selected five districts in Sri Lanka

DPE Perera¹, PRH Pathirana¹, S Pathirage², RMUSK Rathnayaka¹, SI Fonseka²

Introduction and Objectives: *Streptococcus agalactiae* (GBS) is an opportunistic pathogen that causes serious health complications. Recently, it was found that GBS sequence type 283 (ST 283) can act as a foodborne pathogen and cause invasive GBS ST 283 diseases in healthy adults. This phenomenon is strongly associated with consumption of raw freshwater fish. The objectives of this study were to determine the prevalence of GBS in tilapia fish for sale from selected districts (Colombo, Kurunegala, Ampara, Anuradhapura, and Rathnapura) and to assess the adherence of fish handlers to the code of hygienic practices for fresh fish (SLS 974: 1992)

Methods: The five highest freshwater fish consumption districts were selected for sampling. From each district 20 tilapia samples (n=100) were collected from 10 purchasing locations. Internal organs (eyes, brain, heart, spleen, liver, gills, and guts) obtained from fish were enriched in Todd Hewitt broth and in Brain Heart Infusion broth (BHI) supplemented with gentamicin and nalidixic acid respectively as primary and secondary enrichment media. Enriched samples were subcultured onto MacConkey and blood agar. Suspected colonies were identified via Gram stain, catalase, bile esculin, hippurate, CAMP test, and Lancefield's grouping test. The Phoenix (SMIC/ID-2 panel) automated system was used for identification and antimicrobial susceptibility testing. Adherence to hygiene practices among fish handlers was assessed through a questionnaire at sampling sites.

Results: GBS was isolated from only 2 of the 100 samples. The 2 positives were from small-scale village sellers in Ampara (1/20) and Anuradhapura (1/20). All other samples were negative for GBS. As per the survey, most of the fish handlers were not following at least the basic hygienic requirements; of 50 sampling sites, only 30% maintained the cold chain, while only 12% used sanitisers for cleaning equipment and floors. Fish were frequently placed on bare floors or wooden platforms during sales, and cutting and degutting operations were also conducted on the same surfaces.

Conclusion: There is a potential risk of transmitting invasive GBS disease through the consumption of tilapia fish available in the Sri Lankan market. The study underscores the crucial importance of enhancing fish handlers' awareness and adherence to best practices in fish handling to minimise any potential risks associated with GBS contamination.

Keywords: *Streptococcus agalactiae*, group B *Streptococcus* (GBS), ST283, freshwater fish, foodborne diseases

¹Department of Food Science and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka

²Food and Water Laboratory, Medical Research Institute, Colombo 8, Sri Lanka

Address for correspondence: Ms. Pawani Perera, Department of Food Science and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka. Telephone: +94773200774;

Email: pawaniperera84@gmail.com  <https://orcid.org/0009-0005-5123-213X>