SUMMARY

Some commercially important fishes such as Rastrelliger kanagurta, Sardinella longiceps, Scomboromorus guttatus, Johnius sina, Lactarius lactarius, Alepes djedaba, Leiognathus splendens, Mugil cephalus, Sillago sihama and Teuthis vermiculatus of karwar waters were selected for bacteriological analysis.

The fishes were analysed quantitatively and qualitatively for their bacterial load on different anatomical sites during different seasons of the year.

The fish samples were analysed quantitatively for Total Bacterial Load and for pathogenic/indicator organisms such as total coliform, E.coli, faecal streptococci and coagulase positive Staphylococci. The effect of incubation temperature, plating method and culture media on TPC was carried out.

Under qualitative analysis the bacteria were isolated and identified up to generic level and also percentage distribution of different physiologically and biochemically active groups of bacteria such as gelatin liquefiers, nitrate reducers, indole producers and sugar fermentators were determined during different seasons.
Further, some commonly encountered bacterial strains were selected (Vibrio, Pseudomonas, Acinetobacter, Moraxella, Flavobacter/Cytophaga and Micrococcus) to see the individual and combined effect of environmental parameters such as pH, temperature and salinity on their growth. The ability of the cultures to produce extracellular enzymes viz., protease, lipase and amylase were also tested.

The total bacterial load on the different fishes ranged from $10^3 - 10^7$ / g for skin, $10^3 - 10^8$ / g for gills and $10^3 - 10^9$ / g for intestine. Generally, brackish water fishes showed higher count than marine fishes.

The effect of plating method, incubation temperature and culture media implied that spread plate incubated at room temperature on sea water agar media gives better recovery of bacteria.

It is noticed that a significant amount of samples were contaminated with faecal indicator organisms and their seasonal variation revealed that they were at the peak during summer season.

The analysis of variance between plating methods and incubation temperature showed that TPC varied
significantly with plating method and incubation temperature.

The bacterial flora of the fish in the present investigation was comprised of Vibrio, Pseudomonas, Acinetobacter, Moraxella, Flavobacter/Cytophaga, Alcaligenes, Aeromonas, Micrococcus, Bacillus, Arthrobacter and Lactobacillus.

Vibrio formed a predominant genera in skin and gills whereas, that of Pseudomonas in intestine.

The pronounced seasonal variation was noticed in the bacterial flora especially Vibrio and Pseudomonas from the three anatomical sites of all the fishes.

It is noticed that the isolated cultures were very active biochemically being comprised of gelatin liquefiers followed by nitrate reducers and indole producers. Further seasonal variation indicated that winter inhibited the biochemical activity of bacteria.

The three way analysis of variation between biochemically active groups of bacteria, anatomical sites and seasons indicated high significant variation between
biochemically active bacteria and between seasons.

The combined effect of salt concentration and temperature on the selected bacterial strains revealed that with an increasing temperature the requirement of salt concentration also increased.

The ability to hydrolyse protein, lipid and carbohydrate differed with the strains. None of the isolates could bring about fermentation of lactose.