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Microbiological Evaluation and Keeping Quality of Fishes Reared in Livestock Sewage Fed Ponds Without Artificial Feed

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Livestock sewage has been utilized for fish culture. There is lack of information on microbiological evaluation and keeping quality of these fishes. This paper reveals the incidence, types of micro-organisms and keeping quality of fishes reared in livestock sewage fed ponds without artificial feed. These fishes revealed microbial incidence and keeping quality comparable to other fishes. Initial mesophilic and psychrophilic counts varied from 3.38 to 5.56 and 2.47 to 4.74. On an average, the counts reduced by about 40% after evisceration and washing. Whole as well as washed fishes had refrigerated (8 ± 1°C) life of not more than 4 days. The average psychrophilic and mesophilic counts of ice (0 to 1°C) stored whole fishes upto 10th day varied from 3.66 to 4.81, 4.61 to 5.24 and in eviscerated and washed fishes 2.17 to 3.69 and 2.78 to 4.41. Both remained acceptable till the 10th day. Qualitative study of surface slime and gills revealed presence of *Aerobacter (Enterobacter), Aeromonas, Alcaligenes, Bacillus, Clostridia, E. coli, Klebsiella, Micrococci, Proteus* and *Pseudomonas.*

Exploitation of resources to meet the ever increasing protein gap, has given rise to the concept of waste utilization. Livestock sewage which usually goes as a waste, has been used in fish culture with a view to recycle the nutrient and water. Only little work has been done in the country using livestock sewage in fish culture and probably no data on microbiological evaluation of sewage reared fishes is therefore available. Contrary to this, exhaustive reviews on microbiological aspects are available for marine and other fresh water fishes. Both types of fishes are known to harbour various types of bacteria on the skin surface (Nair & Lahiry, 1968; Frazier, 1967; Jay, 1970 and Shewan, 1961).

Under present investigation, the fishes were reared in ponds fed with livestock sewage without artificial feed. This paper describes the incidence and type of micro-organisms normally associated with these fishes; the pattern of their mesophilic and psychrophilic growth during storage and subsequent spoilage along with their keeping quality during refrigerated (8±1°C) and iced (0 to 1°C) storage.

Materials and Methods

Fishes were obtained from composite fish culture pond of the institute. They were brought to the point of sale from where rohu fishes of about 1.0 to 1.5 kg were collected for experiment. Half of the fishes were immediately eviscerated and washed with tap water and the rest were subjected to analysis as whole fishes. Whole as well as washed fishes were divided into two sets each. First set was stored at 8±1°C in refrigerator and the second in ice at 0 to 1°C. Mesophilic and psychrophilic microbial enumeration along with the organoleptic examination of fishes in each set was carried out on 1st (0 to 1h), 4th, 7th and 10th days.

Measured area of skin surface (Jay, 1970) was swabbed using sterile template under aseptic precaution and the swab placed in 10 ml of 0.1% sterile peptone water (IS, 1976). It was agitated and mixed well to give 1:10 dilution. Further serial ten fold dilutions were prepared from this tube. Pour plates in quadruplicate were prepared from each of the three consecutive dilutions

namely, *Klebsiella, E. coli* and *Clostridia.* When fishes are close to land, organisms of terrestrial origin also occur and in such cases *Bacillus* is in abundance (WHO, 1974).

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