Study on the Micro-flora and Chemical Constituents of Preserved Fishes Available in Kathmandu Market

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For the partial Fulfillment of Master of Science in Zoology

BY
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LETTER OF RECOMMENDATION

It is my pleasure to mention here that Ms. Prafulla Joshi has carried out the dissertation entitled "**Study on the Micro-flora and Chemical Constituents of Preserved Fishes Available in Kathmandu Market"** under my supervision and guidance. It is the original work of the candidate and incorporates the discovery of new facts and fresh approach towards their interpretations. Therefore, I strongly recommend the dissertation for the partial fulfillment of the Master of Science in Zoology.

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LETTER OF APPROVAL

This letter is to certify that the dissertation presented by Ms. Prafulla Joshi entitled **"Study on the Micro-flora and Chemical Constituents of Preserved Fishes Available in Kathmandu Market"** has been accepted for the partial fulfillment of the Master of Science in Zoology.

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ABSTRACT

Preserved fish are quite popular among the people of Kathmandu. There are many shops in Kathmandu and Lalitpur where preserved fish are sold. These fish are available in four different forms, viz, ice-preserved or chilled, salted, sun-dried and smoked. Chilled fishes include Rohu (*Labeo* spp.), Carps, Cat fishes etc. Salted fish include *Harpadon nehereus*, sun-dried fish include *Puntius* spp., *Oxygaster* spp. etc. and smoked fish include Naini (*Cirrhinus mrigala*), *Schizothorax* spp., *Garra gotyla, Tor* spp. etc. Most of these fish are supplied from different parts of India such as Andra Pradesh, Bombay while some are brought from different parts Nepal as well. The salted and sun-dried varieties sell in cheaper price than smoked ones. The hygienic condition of fish markets is quite poor which make these fishes susceptible to micro-flora contamination. The micro-flora contamination also depends upon the process followed during the preservation. The bacterial test revealed that in smoked fish (*Cirrhinus mrigala*) the bacteria isolated are *Pseudomonas, Micrococcus* and *Staphylococcus.* In salted fish (*Harpadon nehereus*) colonies of Enterobacteriaceae spp. such as *Salmonella* spp. were isolated. Similary, in sun-dried fish (*Oxygaster* spp.) also species of *Salmonella* and *Escherichia coli* were isolated. Besides bacteria the preserved fish were also subjected for fungi culture. Two different types of fungal conlonies were isolated. In sun-dried fish colonies of *Trichoderma* spp. and *Aspergillus fumigatus* were isolated. In case of salted fish colonies of *Trichoderma* spp. are isolated. The chemical analysis of fish revealed that the protein content of *Cirrhinus mrigala* (smoked fish) is 70.78 percent whereas that of *Harpadon nehereus* (salted fish) is 62.15 percent. Similarly, the protein content of *Oxygaster* spp. (sun-dried fish) was found to be 64.93 percent. The fat content of fish flesh is the factor that determines the quality of fish and hence its price. The fat content of smoked fish, *Cirrhinus mrigala* was highest among the three. It was about 7.23 percent whereas that of *Harpadon nehereus* (salted) and *Oxygaster* spp. (sun-dried) were 6.03 and 4.21 per cent respectively.

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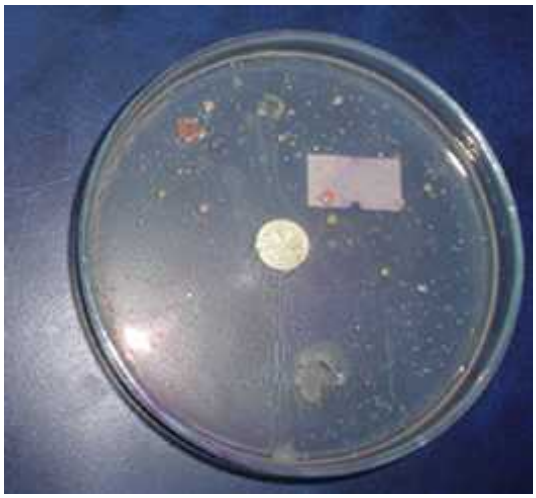

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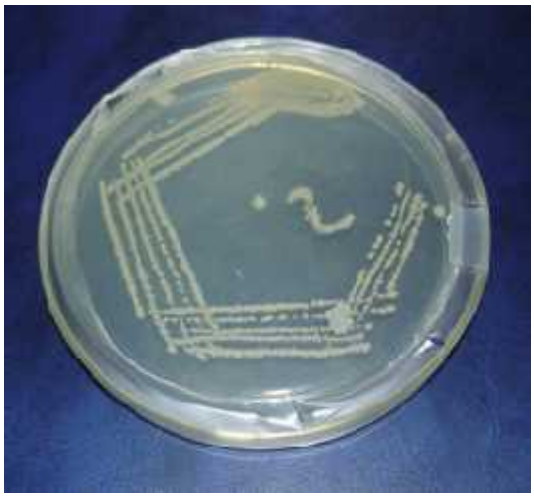

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Biochemical test results

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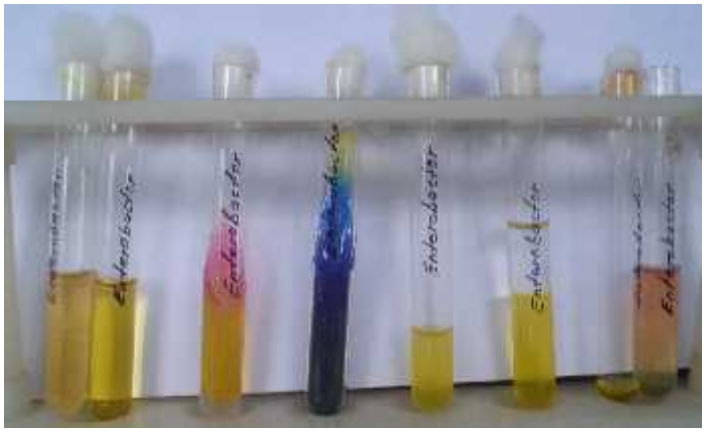

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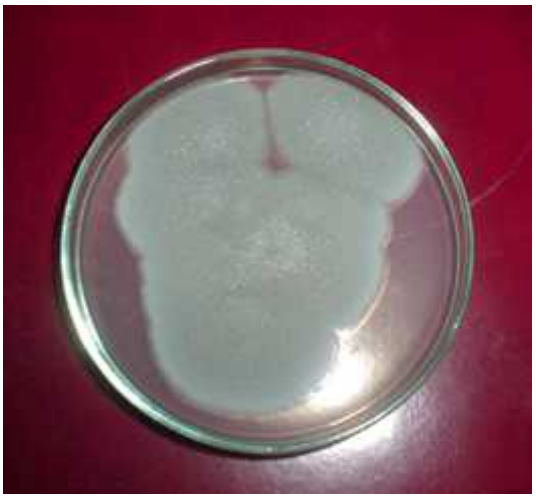

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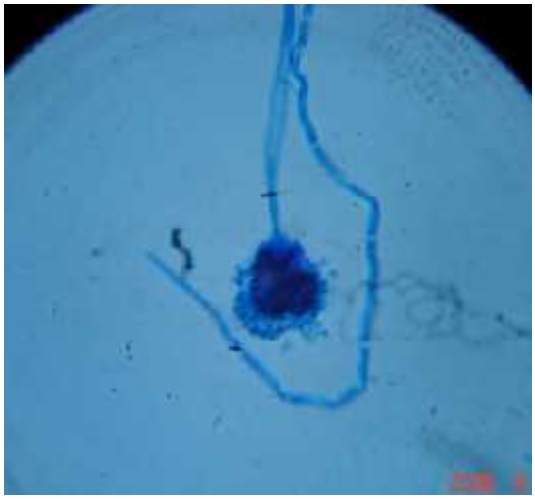

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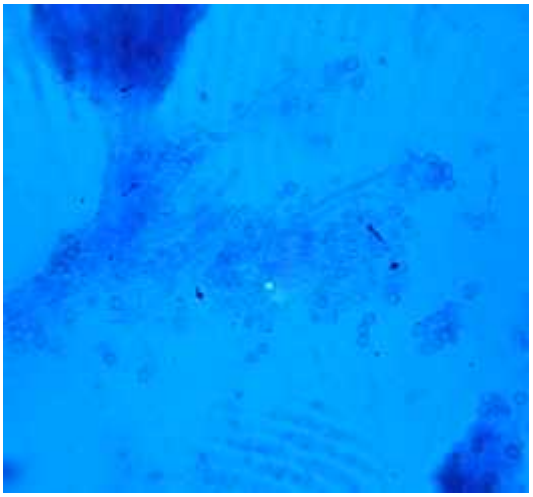

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ACRONYMS

FAO	Food and Agricultural Organization.
IUCN	World Conservation Union
UNESCO	United Nation Educational Scientific and Cultural Organization
NAST	Nepal Academy for Science and Technology