SYNOPSIS

Aquaculture research has been intensified owing to the need for increased animal protein for every increasing human population. But culture of fishes in industrial effluents need lot of research to utilise the effluents. The increasing industrialization and urbanization are causing great pollution. The high rate of increase of human population of India and the rapid pace of its industrialisation have created problems of disposal of waste waters. The industrial effluents are being, by and large, indiscriminately discharged in the nearby water bodies even in the adjoining fields causing ecological imbalances. One among the major industry creating such an unhealthy atmosphere is the alcohol distillery.

The distillaries are discharging the liquid waste water to the near by fields and water bodies causing heavy pollution. The distillery spent wash based on fermentation of alcohol from molasses, is rich in high organic and in-organic substances. Even though this waste water is not toxic but because of their highly putriscible nature causes immediate oxygen depletion in the receiving water, there by creating imbalance in the biotic life of that water. (Tapan Routh and Dhaneshwar 1986).
This research work was carried out to find out how best the distillery effluent can be used for fish culture. This will pave way for controlling pollution and utilization of distillery effluent for fish culture economically.

**HYDROLOGICAL PARAMETERS STUDY OF THE DISTILLERY EFFLUENT:**

The liquid waste water from distillery based on fermentation of alcohol from molasses has been brought to the laboratory by cans. The effluent is dark brownish in colour, and important hydrological parameters of the effluent were analysed in the laboratory.

**COLLECTION OF TEST FISH AND ESTIMATION OF THE SAFE CONCENTRATIONS:**

The test fish *Labeo rohita* of the size 5.4 to 6.9 cm in total length weighing 2.1 to 3.7 g. were brought to the laboratory in oxygen pack from fish seed farm Medak. The fishes were acclimated in glass troughs to the laboratory conditions for a period of one week prior to the experimentation, by feeding with conventional pelleted feed.

The acclimated test fishes were divided in 5 batches with 5 fishes in each glass trough with 10 lits. of distillery effluent in different concentrations by mixing with dechlorinated tap water in the laboratory at room
temperature. The fishes were exposed for a period of 7 days (10,000 minutes) and the sub-lethal concentrations were found out. The experiment were aerated and the fishes were fed with 3% of artificial food daily. When the opercular movements ceased the fishes were considered dead. The LC 50 values were determined.

**ARTIFICIAL FEED PREPARATION, GROWTH AND CONVERSION EFFICIENCY STUDY:**

Artificial feed in the form of dry pellets have been prepared in the laboratory. As the protein content of the food is the determining factor for the growth of fishes, the pelleted feed was prepared with 33% protein by mixing together with finely powdered ground-nut oil cake, fish meal and rice bran in equal ratio. Along with this mixture, vitaminets Forte tablets 500 mg (Multivitamin with minerals) were also powdered and mixed.

The different sub-lethal concentrations of distillery effluent such as 0.1%, 0.25%, 0.5% and 1% were prepared by mixing with dechlorinated tap water. Ten litres of each concentration were taken in glass troughs in triplicate. In each trough 5 fishes were allowed to grow. Concurrent control were maintained under identical
conditions. Initial total length and weight of the fishes were noted. The fishes were fed with a ration of 3% of their body weight of prepared artificial food daily once in the morning. The experiments were aerated continuously. Daily in the evening the waste (faeces) materials were removed with a small hose pipe and the level of the effluent was maintained by adding the same concentrations of distillery effluent. The total length and weight of the fishes were recorded monthly.

The fishes were grown in different sub-lethal concentrations of distillery effluents by feeding artificially prepared pelleted feed at the ratio of 3% of their body weight and food in take was observed by removing the left over food. The conversion efficiency was calculated.

ESTIMATION OF PROXIMATE COMPOSITION:

To find out the variations in nutritive value of the fish grown in the distillery effluent concentrations, the fishes before and after experiment were sacrificed. Their protein, carbohydrate, total lipid and moisture contents in the muscles were estimated and compared with that of the control fish.
HISTOPATHOLOGICAL STUDY:

The histopathological studies were made of liver, gills and kidney by sacrificing control and experimental fishes.

The results are very encouraging to take up fish culture by mixing the distillery effluent with fresh water in certain concentrations. There were no adverse effects on the fishes.

***