SUMMARY

Coir retting is one of the major and small scale industry found in the southern parts of India. This industry provides employment to a large number of people especially women folk, who find this work as a source of their principle income. Traditional, conventional method of retting has adverse impact on the eco system including fauna, flora and human beings. The retting of coconut husk has brought about by the pectinolytic activity of microorganisms especially bacteria and fungi, degrading the fiber binding material of the husk and liberating large number of organic substance into the water. The oxidation of the organic matter liberates hydrogen sulphide which adversely affect the natural eco system which adversely affect the natural eco system lack of dissolved oxygen, very high VOD chloride hardness ,nutrients and low pH with foul smell of hydrogen sulphide are the characteristic futures of retting yards.

The pollution resulting from the coconut husk industry adversely affects the eco system. The ambient backwater loses its ascetic value and changes into grayish blackish color. High organic content depleted oxygen condition and presence of hydrogen sulphide has affected the ecology of the retting sites. Low productivity in terms of planktome and nektomic organisms and depleted fishing wealth were observed on these. Fishery wealth –fishes, prawns, clams and crab fishery were adversely affected in terms of community diversity and biomass

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productivity. Some of the economically important species were totally absent in the region.

Coir pith effluent samples was collected from Rajakamangalam, Inayam and Kollencode regions of Kanyakumari District, Tamil Nadu, India. Effluent samples were collected in large sterilized bottles and brought to the laboratory. Physico-chemical characteristics were done on the same day were brought to the laboratory. Physico-chemical analysis of the effluent was carried out according to standard methods of American Public Health Association (APHA, 1992). The results showed that all three pond waters are slightly acidic nature and also the presence of high quantity of both organic as well as inorganic nutrients. The value of Dissolved Oxygen (DO) was low which indicated that the highly obnoxious condition. The BOD and COD level of the effluent were 240 and 482 mg/L in lynayam. Though BOD and COD level of the effluent were high as compared to IS Standard, their levels were not so much high. There was no carbonate in the effluent but fairly high level of free CO2 and bicarbonate was recorded as 128 mg/L and 150 mg/L, respectively. In this investigation, nutrient such as nitrate, nitrite, ammonia, calcium, magnesium and chloride were recorded. Nitrite, ammonia and chloride content were higher than other nutrients recorded.

Different types of bacteria were isolated in the selected coir retting ponds. It was observed that the Pseudomonas, E. coli and Nitromonas members were occupied more in three pond effluent stream. Likewise the Pseudomonas and Nitromonas were dominated more in these ponds at a rate of 46 and 34%
respectively. This is attributed to favorable conditions of oxidizable organic matter, less DO and high calcium content favors these bacterial growths. Based on the biochemical classification it was concluded that the isolated potent, novel strains were *Pseudomonas putida* and *Pseudomonas fluorescens*. The 16s rDNA amplification and the sequence of amplicon also conforms the availability of these two sps.

The optimization of culture media and culture conditions of isolated bacteria were carried out in the IVth Chapter. Effect of different media on bioactivity, carbon sources on bioactivity, nitrogen sources on bioactivity, different amino acids on bioactivity, different salinity (ppt) on bioactivity, different medium pH on bioactivity and different (°C) temperature on bioactivity were carried out using standard procedures. The results clearly displayed that both the bacteria were grow efficiently in SSY – Starch – Soya bean meal – Yeast extract broth than the other tested four media. The results of carbon sources on bioactivity against the tested biofilm bacterial strains produced effective bioactivity in Xylose, Inositol and Galactose medium. In addition to that *P. fluorescens* grown in Fructose supplement. The results of nitrogen utilization of both bacteria are more or less same. Interestingly *P. putida* only utilized amino acid (Tyrosine) source.