



**A.V.V.M. Sri Pushpam College (Autonomous)**

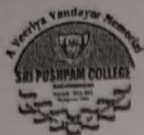
**Poondi– 613 503, Thanjavur-Dt, Tamilnadu**

*(Affiliated to Bharathidasan University, Tiruchirappalli – 620 024)*

**3.7.1 Number of Collaborative activities per year  
for research/ faculty exchange/ student  
exchange/ internship/ on –the-job training/  
project work**

## **Collaborating Agency:**

**Dr. R. Krishnan Assistant Professor, Dept. of Microbiology,  
St. Josephs' College of Arts & Science, Cuddalore.**



Dr.A.PANNEERSELVAM  
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Date: 15.10.2016.

**LINKAGE**  
**For the year 2016-2017**

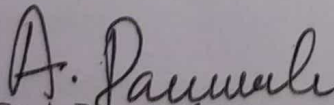
**Between**

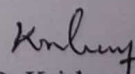
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|--|---|--|
| 1. Dr.A.Panneerselvam,<br>Associate Professor and Head (Rtd.,)<br>PG & Research Department of Botany<br>and Microbiology<br>A.V.V.M Sri Pushpam College<br>(Autonomous), Poondi – 613 503. | & | 2. Dr. R. Krishnan<br>Assistant Professor<br>Department of Microbiology<br>St. Joseph's College of Arts and Science<br>Cuddalore, TamilNadu, India.. |
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Considering the significance of the noble cause for the student community, we have come forward to collaborate with each other to exchange research knowledge, expertise, laboratory and library facilities to the process of scientific research and education in the field of Biological science. The parties (mentioned above as 1. & 2.) have had preliminary discussion in this matter and have ascertained areas of broad consensus. The parties now therefore agreed to enter in writing these avenues of consensus, under a flexible linkage, and this project aims to fill the gap between knowledge demand and subject expertise related to the mentioned field.

**Joint Responsibilities**

- Sharing of laboratory facilities, library resources, database etc.,
- Joint Publication of research articles, books, magazines, bulletins etc.,
- Jointly organizing conferences, seminars, symposia and workshops.
- Submitting joint proposals for research funding from agencies like UGC, CSIR, DST and TNSCST.
- Patenting Microbes, Plants patents Procedure, Product development and Novel equipments in Biological sciences (Indian and Foreign Patenting)

  
Dr. A. Panneerselvam

  
Dr. R. Krishnan



## ISOLATION AND CHARACTERIZATION OF HALOPHILIC BACTERIA PRODUCING AMYLASE AND PROTEASE ENZYME FROM MARAKKANAM SALT PAN

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### ABSTRACT

Halophilic bacteria are organisms which inhabit the salt-rich environment and are capable of producing wide variety of bioactive compounds. Sediment samples were collected from four different sites of Marakkanam salt pan, Tamil Nadu. Totally, 23 halophilic bacteria were isolated and their colony characteristics were recorded. Based on the colony morphology and gram staining results, ten isolates were selected and screened for their ability to produce commercially important hydrolytic enzymes such as amylase and protease. The results showed that the isolates MSP1 and MSP2 produce highest amylase and protease enzyme activity. Further, the isolates MSP1 and MSP2 were identified as *Bacillus* sp. and *Pseudomonas* sp. respectively by 16S rRNA method.

**KEYWORDS:** Halophiles, Marakkanam, Salt Pan, Amylase, Protease, *Bacillus* sp & *Pseudomonas* sp

Received: Jan 01, 2017; Accepted: Jan 31, 2017; Published: Feb 03, 2017; Paper Id.: IJBRDFEB20171

### INTRODUCTION

Solar salterns or salt pans are artificial, shallow open ponds used to evaporate brine for the salt production. The high salt concentrations at these environment represent a unique group of organisms that survive at high salinities, high temperatures and tolerate severe solar radiations (Jamadar *et al.*, 2016). The microorganisms that live under these extreme salt conditions are said to be halophilic and halotolerant microorganisms. These halophilic microorganisms are also adapted to high pressure of the environment resulting from high salinity. Halophiles include all the three domains, namely Archaea, Bacteria and Eucarya and contain representatives of many different physiological types adapted to a wide range of salt concentrations as high as salt saturation (Aljohny, 2015).

In general, halophiles adapted to two special defensive mechanisms to cope with the osmotic pressure induced by the high NaCl concentration of the environment in which they live: Some extremely halophilic bacteria accumulate inorganic ions in the cytoplasm ( $K^+$ ,  $Na^+$  and  $Cl^-$ ) in order to balance the osmotic pressure of the medium. In addition to that, they have also developed specific proteins that are stable and active in the presence of salt. In contrast, moderate halophiles accumulate large amounts of specific organic osmolytes, which function as