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. Rathish Associate Professor Dept. of Microbiology

Marudhupandiar College, Vallam

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Vallam, Thanjavur
TamilNadu, India.

Date: 05.06.2016.

LINKAGE

For the year 2016-2017

Between

1. Dr. V. Ambikapathy,
   Assistant Professor
   PG & Research Department of Botany and Microbiology
   A.V.V.M Sri Pushpam College
   (Autonomous), Poondi – 613 503.

&

2. Dr. R. Rathish
   Associate Professor,
   Department of Microbiology,
   Marudupandiyar College,
   Vallam, Thanjavur.

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. V. Ambikapathy

Dr. R. Rathish

ISSN: 0976-3031

Available Online at http://www.recentscientific.com

International Journal of Recent Scientific Research
Vol. 7, Issue, 12, pp. 14834-14836, December, 2016

International Journal of Recent Scientific Research

Research Article

ISOLATION AND SCREENING OF L-ASPARAGINASE ENZYME FROM MICROFUNGI

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ARTICLE INFO

Article History:

Received 05th September, 2016
Received in revised form 08th October, 2016
Accepted 10th November, 2016
Published online 28st December, 2016

Key Words:

Soil sample, Microfungi, L-asparaginase,

ABSTRACT

Marine micro fungi are a great ability in producing enzymes in a minimal medium containing L-asparaginase enzyme and phenol red as indicators. Isolation and identification of microfungi from marine soil samples. Some of the potential microfungi were isolated and characterized by using standard manual. The screening of microfungi on the basis of enzyme L-asparaginase activity by standardized to hydrolysis from the various sources. Different culture condition was examined such as pH, temperature, incubation period and nutrient sources were optimizing for enzyme production. The results were discussed in detail

INTRODUCTION

Microbial L-asparaginase is one of the most important industrial enzymes of interest on accounting for about 40 % of the total worldwide enzyme sales (Elshafei *et al.*, 2012). The enzyme L-asparagine amido hydrolase E.C.3.5.1.1 belongs to an amidase group that catalyzes the hydrolysis of the amino acid L-asparagine to L-aspartic acid and ammonia. A remarkable achievement in the field of medicine was the development of the L-asparaginase enzyme much significance in medical field for the treatment of leukemia especially acute lymphoblastic leukemia (ALL) and an effective antitumor agent (Verma *et al.*, 2007). L-asparaginase is also widely used in baking and food industries to reduce the formation of carcinogenic acrylamides in biscuits and in deep fried potato (Pedreschi *et al.*, 2008 and Mohan Kumar and Manonmani, 2012).

L-asparaginase is widely distributed in plants, animals and microorganisms. L.asparaginase is a tetramer protein that deaminates Asn and Gln. L-asparaginase inhibits protein synthesis in T-cells by catalyzing the conversion of L-asparagine to L-aspartate and ammonia, and this catalytic reaction is essentially irreversible under physiological conditions. L-asparagine is a major requirement by the cells for the production of protein. It can be produced within the cell by an enzyme called asparagines synthetase or can be absorbed from outside. Tumor cells, more specifically lymphatic tumor cells, require high amount of asparagines for their rapid malignant growth. Therefore, L-asparagine is an essential amino acid for the growth of tumor cells, whereas the growth of normal cells is not dependent on its requirement as it can be synthesized in amounts sufficient for their metabolic needs with their own enzyme L-asparagine synthetase. The presence of L-asparaginase deprives of an important growth factor and them failure to survive. Thus the development of enzyme as a potent anti-tumor or anti leukemic drug (Neelam and Kuldeep, 2007). L-asparaginase has its application in food industry. L-asparaginase can be used as a food processing to reduce the formation of acrylamide, a suspected carcinogen, in starchy food products. Acrylamide is a chemical compound, formed in starchy foods when they are baked or fried. During heating the amino acid asparagine, naturally present in starchy foods, is converted into acrylamide in a process called the Maillard reaction. The reaction is responsible for giving baked or fried foods their brown color, crust and toasted flavour. By adding asparaginase before baking or frying the food, asparagine is converted into another common amino acid, aspartic acid, and ammonium.

L-asparaginase from microbial sources has gained much attention because of its high productivity. It is extracellular and therefore secreted in to the fermentation medium. Among microbes, this enzyme is produced by bacteria, fungi and actinomycetes. Microbial strains like *Escherichia coli* (Younes *et al.*, 2008), *Erwinia caratovora* (Vaibhav *et al.*, 2010), *Pseudomonas aeruginosa* (Manikandan *et al.*, 2010), *Streptomyces gulbargensis* (Amena *et al.*, 2010), *Aspergillus*