**OPTIMIZATION OF NARINGINASE PRODUCTION FROM *ASPERGILLUS FLAVUS* IN SOLID STATE FERMENTATION MEDIA USING CITRUS PEEL AS SUPPORT**

**Keerthini Srikantha1, Ranganathan Kapilan2, Vasantharuba Seevaratnam1**

1Department of Agricultural Chemistry, Faculty of Agriculture, University of Jaffna, Sri Lanka

2Department of Botany, Faculty of Science, University of Jaffna, Sri Lanka

**ABSTRACT**

Naringinase is an enzyme complex, contains rhamnosidase and glucosidase. It is commercially attractive due to its potential usefulness in pharmaceuticals and food industries. Statistical experimental designs can be adopted at various phases of optimization to increase the enzyme production. In the first step of optimization using Plackett-Burman design, naringin, sucrose, NH4NO3 and citrus peel significantly affected the naringinase activity of *Aspergillus flavus*. In the second step, L9 (34) orthogonal design was applied to determine the optimal concentration of each significant variable. The optimum values for the significant variables were obtained as follows: 10 g/L naringin, 7.5 g/L citrus peel, 5 g/L NH4NO3 and 5g/L sucrose. Under this optimum condition, the naringinase activity increased up to 1480.96 ± 13.998 U/g dry matter. This activity was further increased up to 2346.48 U/g dry matter when the culture condition were optimized. Highest activity was obtained at 25ºC and pH 5.0 on the 6thday of fermentation. Optimization of culture conditions and the solid fermentation media resulted in 3.74% increase in the naringinase production from *Aspergillus* *flavus*. Optimization of media composition and culture conditions by statistical design is efficient to increase the naringinase production by *Aspergillus flavus* in solid media. Optimization of solid stage fermentation system using paddy husk as substrate facilitates the utilization of agro waste. This study concludes that the usage of citrus peel significantly increases naringinase activity of *Aspergillus flavus*. Further this method eliminates the issue of waste disposal in citrus fruit processing industries.

**Keywords:** *Aspergillus flavus*, factorial experiment, naringinase, optimization, orthogonal contrast, Plackett-Burman design

Keerthini, S, Kapilan ,R, and Vasantharuba,S.(2016).Optimization of naringinase production from *Aspergillus flavus* in solid statefermentation media using citrus peel as support. Scholars Academic Journal of Biosciences ,4(6),pp.535-543.

DOI: 10.21276/sajb.2016.4.6.16

ISSN 2321-6883 (Online)

ISSN 2347-9515 (Print)