

**DEVELOPMENT OF SIMVASTATIN PRODUCTION BY MONASCUS  
PURPUREUS IN SOLID-STATE FERMENTATION  
USING AGRICULTURAL PRODUCT**

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**ABSTRACT**

*Monascus purpureus* is a non-pathogenic fungus that can produce statin called simvastatin, which can lower blood cholesterol level. The objectives of this research were to explore the potential of agricultural product on simvastatin and identify the optimal condition of simvastatin production in solid-state fermentation by *Monascus purpureus* FTC 5356. The local agricultural products used were banana, guava, pumpkin, coconut meat, corn and papaya. Initially, the local agricultural products were ground and the initial moisture content of the agricultural products was fixed at 50% and pH 6. The mixtures were then incubated at 30°C for 11 days. Later, variety conditions of initial moisture content and nitrogen supplementation were introduced and examined on the simvastatin. Further experimental work was carried out using Central Composite Design (CCD) of Response Surface Methodology (RSM), with two factors of initial moisture content and nitrogen source. The results suggested that, among the agricultural products tested; only corn powder was able to produce simvastatin. The optimal condition for simvastatin production on corn was at 50% initial moisture content with supplementation of 0.2% nitrogen source.

**KEYWORDS:** *simvastatin; Monascus; solid-state fermentation; response surface; central composite design*

**1.0 INTRODUCTION**

Statins are a group of drugs that mainly used in lowering blood cholesterol. Statins are generally capable of bringing down the cholesterol level by from 20% to 60%. The discovery of HMG-CoA (3-hydroxy-3-methylglutaryl-coenzyme A), which acts as inhibitors was a step forward in the prevention of hypercholesterolemia and related diseases such as atherosclerosis, peripheral arterial disease, cerebrovascular disease, sepsis, ischemic disease and bone fracture (Khaled, 2007; Sultana et al., 2010). Recently, cardiovascular diseases are the major causes of death. Hence, there is a need for in developing processes for production of statins with approval by the Food and Drug Administration (FDA).

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