

# Process Optimization of Amylase Production By Bacteria Isolated from Indigenous Sources using Response Surface Methodology (RSM)

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**Abstract**—*Amylase is an enzyme that catalyses the hydrolysis of starch into sugars. The processes of amylase production are vastly varying and thus is very important that the processes be optimized to get a good yield or production rate of amylase. Optimization is finding an alternative with the most cost effective or highest achievable performance under the given constraints, by maximizing desired factors and minimizing undesired ones. The present study was under taken to optimize the process conditions for maximum amylase reaction rate using Response Surface Methodology (RSM). Bacterial amylase was obtained from two different indigenous sources: one from vegetable extract and the other from soil. Various physicochemical parameters viz. pH, temperature, harvesting time of the cells, enzyme volume were optimized for maximum amylase reaction rate. The final results obtained by the models generated suggests the optimum process conditions obeying the quadratic model and the optimum process conditions for the process were different for the two different sources of amylase. It was found that for vegetable extract, the optimum process conditions for maximum amylase reaction rate were- reaction temperature: 50°C, reaction pH: 5, growth pH: 6.5, harvesting time: 17h and enzyme volume 400μL. For mixed bacterial culture from soil, the optimum process conditions for maximum amylase reaction rate were- reaction temperature: 40°C, reaction pH: 4 and harvesting time: 6h.*