

PRODUCTION OF AMYLASE ENZYME BY LOCAL ISOLATION OF *ASPERGILLUS NIGER*

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ABSTRACT : *Asergillusniger* is the more used fungus for commercially amylase produce. Basic fermentation media was investigated employing our laboratory fungal isolates that isolated from different sources to produce the extracellular amylases. Rice, Dough and Soil samples were collected from different localities in Baghdad /Iraq.A total of 35 fungal isolates were identified as *A.niger* according to cultural and microscopic morphology. The potential to produce amylase for all isolateswas limited by clear zone formation on starch agar media. The maximum potential and maximum activity of amylase productionshowed by *A. niger* (3) from Dough source with (0.68 u / ml) at PH:4 and 25R °C to be the best process parameter affecting on amylaseactivity. The least amylase production was found in *A. niger* (3) from soil source (0.42 u / ml). Basic fermentation media was found to be the best substrate because containing carbon source. Finally *A. niger* is very important source for amylase production so, furthercharacterization and optimizethe parameters of *A. niger* amylase production is very important in industry because the variety application of amylase.

Key words : Amylase, *Aserpillus niger*, isolation, enzyme activity.

INTRODUCTION

Enzymes called amylase are production by wide variety of organisms to digest starches. Starch is a polymer of glucose, and is hydrolyzed by amylases to glucose and other products (Souza, 2010). Interest in the application of microbial enzymes in different industrial processes has increased as a result of recent detections on the use of microorganisms as a source of industry-related enzymes. However amylases from microbial sources especially fungi (*Aspergillus niger*) have gained much attention because of the variability and high productivity of fungi (Varalakshmi *et al* 2009).

Fungi as *Aspergillusniger* degrade external polysaccharide by secreting hydrolytic enzymes that cleave polysaccharides into smaller molecules that can then be assimilated. Citric acid and other organic acids are produced by *A. niger*, also Proteases, Lipases and other industrial enzymes can produce by this fungi, so *A. niger* is very important because of these products are basic material in transformation to food enzymes (Karaffa L and Kubicek C P, 2019; Tong Z *et al*, 2019; Gurung N *et al* 2013). *A. niger* is considered as a fermentation organisms that needed it in various industrial process because of their products, especially amylase that widely used in basking, brewing, confectionary, sugar, paper coating, alcohol, syrup industries and for treatment

of sewage (Nayarisseri A *et al*, 2011).

The black aspergilla or *A. niger* group are the fungi we commonly call black mold, the genus is widely distributed from the arctic region to the tropics. The air everywhere seems to contain the conidia of these organisms, the soil contain the spores of the *Aspergillus* and this organisms are capable to utilizing an enormous variety of substrate for food because of the large number of enzymes they produce, and because of their great enzymatic activities, *Aspergillus* are employed to several industrial processes as citric acid and glutamic acid which are manufacturer commercially by the use of *Aspergillusniger* (Jianlong W, 2000). Accordingly some products which are produced by using the microorganisms, *A. niger* have been assessed as acceptable for daily intake by the world health organization (Alexopoulos C J and Mims C W, 1979). The Japanese wine, sake depends on several microbial fermentation reactions (Tatsukami Y, 2018). First, cooked rice is inoculated with the fungus *A. oryzae*, the fungus produces the enzyme amylase which degrades the rice starch to sugar (Galbraith J C and Smith J E, 1969). The beneficial microorganisms divided into two types, amylase production and other products in industrial, the second type is used in food technology and called probiotics. Probiotics improved their activity against many types of microorganisms that isolated from many