OPEN ACCESS Freely available online

ISSN: 1948-5948
Journal of Microbial & Biochemical Technology

Perspective

Isolation and Enhancement of Microbial Strains for Effective Microbial Amylase Production

Kobe Dazai*

Department of Biotechnology, Osaka University, Osaka, Japan

DESCRIPTION

According to the reactions they catalyze, the International Enzyme Commission has divided enzymes into six different classes: EC1 Oxidoreductases, EC2 Transferases, EC3 Hydrolases, EC4 Lyases, EC5 Isomerizes, and EC6 Ligases. In general, plants, animals, and microbes can all provide physiologically active enzymes. Microbial enzymes have traditionally been preferred because they are simpler to isolate in large quantities, can be produced quickly and cheaply, are stable under varied harsh environments, and their components are also safer and easier to manage. Enzymes produced by microorganisms and released into the medium are extremely dependable for use in industrial processes and applications. Additionally, using microorganisms as the host cell makes it simpler to produce and express recombinant enzymes. These enzymes are used for chemical synthesis, bioconversion (as a catalyst), and bioremediation. The potential applications of many microbial enzymes have been illustrated in this regard. Studies on enzyme purification have mostly concentrated on proteases, lipases, and amylases with relation to industrial uses. Moreover, a number of bacteria that produce end hydrolases or exohydrolases, which are extracellular hydrolases, have been identified from various sources.

The enzyme -amylase reacts more quickly than -amylase. The amylases are also known as glycoside hydrolases because they break down -1-4 glycosidic linkages. Amylases have specialized substrates and are broadly dispersed in living systems. As amylase substrates are readily accessible from low-cost plant sources, more cost-effective uses for the enzyme are possible. End amylases and exoamylases are two categories of amylases. In the starch molecule, the end amylases randomly catalyze hydrolysis. This results in the synthesis of oligosaccharides of different chain lengths, both linear and branched.

Before being tested for the synthesis of desired enzymes, it is required to isolate promising and effective bacterial or fungal strains. Microbes are everywhere and can be found in any environment, as has been noted previously. Although the bacteria can be adapted to use a specific substrate, the most effective strains are typically found in areas with abundant substrates. Dilution factor is a typical technique for isolating strains since it reduces the number of colonies and makes selection easier. Substrate selection is a different technique where effective strains are isolated based on their affinity for a certain substrate. Many bacteria and fungi have been isolated and their ability to produce amylase has been investigated using these techniques.

The majority of uses for microbial amylases come from the industrial and fields and come from bacteria, fungus, and yeast. Even within the same genus, species, and strain of microbes, the amount of amylase produced varies. Also, the amount of amylase produced varies based on the microbe's place of origin, with strains isolated from environments rich in starch or amylose naturally producing more of the enzyme. Particularly in fermentation processes, variables like pH, temperature, and carbon and nitrogen supplies all have a significant impact on how quickly amylase is produced. Microorganisms can be genetically modified, so strains can be enhanced to produce better amylase yields. Moreover, microbes can be honed to create effective amylases that are stable at extreme temperatures.

Recombinant DNA technology and genetic engineering are the two most prevalent molecular methods used to support effective enzyme production. Amylase is produced using recombinant DNA technology by choosing an effective amylase gene, inserting the gene into the proper vector system, transforming the bacterium to produce a large amount of recombinant protein, and purifying the protein for use in other applications. Amylase production or secretion can be checked using a variety of conventional techniques, such as solid- or solution-based ones. In contrast to solution-based approaches, which use the Dinitro Salicylic Acid (DNS) and Nelson-Somogyi (NS) techniques, the solid-based method is carried out on nutrient agar plates using starch as the substrate. The solid-agar technique is used to precisely inoculate the correct strain onto the starch-containing agar at the centre of the Petri plate. When the plate is flooded with iodine solution after an appropriate incubation period, it shows a dark bluish tint on the substrate region and a clear zone around the inoculum, suggesting that the microbial amylase has used starch.

Correspondence to: Kobe Dazai Department of Biotechnology, Osaka University, Osaka, Japan, E-mail: kobeda@gmail.com

Received: 02-Feb-2023, Manuscript No. JMBT-23-20296; **Editor assigned:** 06-Feb-2023, Pre QC No. JMBT-23-20296 (PQ); **Reviewed:** 20-Feb-2023, QC No. JMBT-23-20296; **Revised:** 27-Feb-2023, Manuscript No. JMBT-23-20296 (R); **Published:** 06-Mar-2023, DOI: 10.35248/1948-5948.23.15:546

Citation: Dazai K (2023) Isolation and Enhancement of Microbial Strains for Effective Microbial Amylase Production. J Microb Biochem Technol.15:546.

Copyright: © 2023 Dazai K. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.