Enzyme Engineering
ISSN: 2329-6674
OPEN ACCESS Freely available online
Opinion Article

A Note on Enzyme Engineering and its Applications

Alyssa Conanain*

Department of Biotechnology, North Carolina State University, Raleigh, USA

DESCRIPTION

Enzyme engineering is the process of converting raw materials into usable chemicals and applying them using the biocatalytic function of enzymes in a reaction device, such as enzymes and enzyme-containing cells (animals, plants, and microbes). Enzyme preparations, immobilisation of enzymes, modification and transformation of enzymes, and enzyme reactors are all examples of social science. It's used extensively in the food, pharmaceutical, and light industries. Microorganisms are commonly used as the primary source of enzymes in large-scale synthesis. As the need for enzymes with altered activity, selectivity, and stability grows, Enzyme engineering is a useful method for meeting the demand for enzymes that are tailored to specific industrial processes.

Scientific understanding of enzyme structure and function determines the best strategy for designing enzymes. Each enzyme engineering technique, such as rational design, directed evolution, and semi-rational design, has its own set of applications and limitations that must be considered when deciding which strategy is appropriate. Enzymes are natural catalysts that allow life to flourish in all living cells. Engineers have exploited the catalytic properties of certain helpful enzymes by isolating them from their biological environments and using them for industrial uses. Enzymes can be used to create new compounds and make synthetic processes more straightforward.

Applications in the pharmaceutical industry

Impurities including protein, starch, pectin, and other contaminants must be removed from drugs throughout the biopharmaceutical process. Traditional extraction procedures struggle to separate impurities in medicine, and they can easily destroy the drug's active ingredients. As a result, extracting with enzyme engineering is a viable approach.

Antibiotics production

Antibiotics are also commonly made with enzyme-based medicines. Enzyme engineering is now used to make a variety of medications, including some valuable ones. Penicillin acylase, for example, is used to make semi-synthetic antibiotics.

Application in the industrial sector

Enzymes are employed in many different fields, including technical applications, food processing, animal nutrition, cosmetics, medicine, and research and innovation. At present, around 4000 enzymes are known, with about 200 microbial original types being used commercially. However, only roughly 20 enzymes are produced in considerable quantities. An increase in the number of industrial enzymes is expected as our understanding of enzyme synthesis biology, fermentation processes, and recovery technologies improves.

Technical applications of enzymes

Technical enzymes are commonly used as bulk enzymes in the detergents, textiles, pulp and paper, organic synthesis, and biofuel sectors. Currently, accessible enzymes used in these fields include amylases, proteases, lipases, cellulases, xylanases, and catalases.

Enzymes in food processing

Food enzymes are used to enhance the flavour, texture, digestibility, and nutrient benefits of baked goods, fruit juices, and cheeses, as well as the creation and fermentation of wine and beer. In terms of enzyme regulation, food enzymes might be characterised as food additives or processing aids. With the exception of lysozyme and invertase, which are used as additives, the majority of food enzymes are used as processing aids. The employment of evolutionary techniques in enzyme engineering has increased the range of industrial enzyme applications. Enzyme engineering is currently a well-established field capable of optimising a catalyst for the synthesis of a desired product in a predictable manner in an industrial process.

Correspondence to: Dr. Alyssa Conanain, Department of Biotechnology, North Carolina State University, Raleigh, USA, E-mail: asscona@gmail.com
Received: 2-Mar-2022, Manuscript No.EEG-22-17078; **Editor assigned:** 7-Mar-2022, PreQC No. EEG-22-17078 (PQ); **Reviewed:** 21-Mar-2022, QC No. EEG-22-17078; **Revised:** 25-Mar-2022, Manuscript No. EEG-22-17078 (R); **Published:** 01-Apr-2022, DOI: 10.35841/2329-6674.22.11.1000178
Citation: Conanain A (2022) A Note on Enzyme Engineering and Its Applications. Enz Eng.11: 178.