

From Lab to Pilot: Enginzyme's Developments in Enzymatic Glycosylation

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1. Introduction

Enzymatic glycosylation has emerged as a pivotal process in the food, cosmetic and chemical industries, offering an efficient way to synthesize a variety of valuable products and intermediates. Enginzyme has been at the forefront of this development, leveraging proprietary enzyme technology to streamline several glycosylation processes. This presentation will discuss our journey from lab-based research to almost market-ready applications, highlighting key innovations, challenges, and future directions.

Enginzyme utilizes a novel technology to efficiently run different types of glycosylation. Our approach integrates high-throughput enzyme screening and advanced immobilization techniques to enhance enzyme stability and activity. Furthermore, we develop end-to-end processes to synthesize, isolate and purify our target products for scalable and cost-effective production.

Our company has successfully developed tailor-made catalysts that are highly selective at mild reaction conditions. Notably, we produced over 100kg of food grade kojibiose, a replacement for table sugar with prebiotic properties and hundreds of grams of alpha-arbutin, a cosmetic ingredient to treat pigmentation.

The transition from laboratory to pilot presented numerous challenges, including catalyst development and optimization, process development and scale-up, and regulatory compliance. By addressing these challenges, we have successfully developed a robust enzymatic glycosylation process to produce kojibiose and arbutin that meets industry standards. Our collaboration with key players in the food and cosmetic industries has further validated the commercial potential of our technology.

2. Conclusions

Enginzyme's advancements in enzymatic glycosylation represent a significant leap towards sustainable and efficient manufacturing processes in the biopharmaceutical and chemical sectors. Future work will focus on expanding our target molecule repertoire and exploring new applications to further enhance the impact of our technology.

Keywords

Enzymatic glycosylation, biocatalysis, enzyme engineering, sustainable manufacturing, Enginzyme.

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