EM-02

Construction of overexpression of β-glucosidase*Lactobacillus* to improve the efficiency of biological conversion

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Lactobacillus is a common Gram-positive bacterium, usually found in human gastrointestine and vagina. It has high importance on medical application and health food.*Lactobacillus rhamnosus* belongs to probiotics which have many benefits to human. In this study, we use*Lactobacillus rhamnosus*as a biological hostandfurther establish a platform to overexpress the product - β-glucosidase.β-glucosidase is a hydrolase which cancatalyze some chemical compounds into a glucose and another product through hydrolyzing glycosidic bond. Numerous studies have found that after the interaction between β-glucosidase and herbal medicine, there are some functional compounds can be produced.Ginsenoside, a kind of herbal medicine, will form a compound called ginsenoside Rh2 after the interaction with β-glucosidase and the compound willinduce the apoptosis of cancer cells. We choose pGHL6, a shuttle vector, as a scaffold of expression, and we hypothesize this shuttle vector can survive and constantly self-reproduce in the host-JB3(*Lactobacillus rhamnosus*).Then, we want to join the known sequence ofβ-glucosidase with pGHL6 to form a recombinant DNA and deliver this recombinant DNA into JB3 by electroporation, and screening the JB3 with resistant gene on the condition of chloramphenicol. We further compare the difference of enzyme activity of β-glucosidase between the original and the constructive. The purpose of this study is to establish a system of overexpression and lead to a useful tool which can apply in biological conversion of herbal medicine.