

Industrial Medium Optimization of Antimicrobial *Lactobacillus fermentum* IB 261. by Statistical Experimental Design Methods

In-Su Lee, Young-Bum Kim, Ji-Ho Park, Hyang-Bok Lee, Kyoung-Mo Ku,
Dong-Joon Kim*

Institute of Biotechnology, MG Intobio Co., Ltd, Incheon, 402-751, Korea
TEL: +82-32-874-9241, FAX: +82-32-874-9240

Abstract

Lactobacilli may play an important role by secretion of antibacterial substances such as organic acid, H₂O₂ and bacteriocin in the domestic animals. so they are widely used as probiotics and feed additives.

We isolated 108 lactobacillus strains from human being and animals to identify 16S rRNA sequence, Among 108 strains, *Lactobacillus fermentum* IB 261 inhibited the growth of *Listeria monocytogenes* which could instigate porcine abortion and paralysis.

In this study, medium composition of *L. fermentum* IB 261 was optimized by a series of statistical experimental design like PBD(Plackett Burman Design) and BBD(Box-Behnken Design) because of expensive MRS medium.

A factorial design was performed for optimal production of the antimicrobial substance and viable cell, which were expressed by relative performance index, using response surface methodology (RSM) Optimum culture medium contained 7g/L skim milk, 6g/L whey, 23g/L glucose, 1g/L tween 80, 4g/L K₂HPO₄, 6g/L yeast extract, 5g/L ammonium citrate, 4g/L sodium acetate. and, during batch cultivation, the highest viable cell count reached to 7.1 X 10⁹cfu/mL and antimicrobial activity against *Listeria monocytogenes* was doubled. pH was maintained at 4.9.

References

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