

Industrial Medium Optimization of Antimicrobial *Lactobacilli* spp. by Statistical Experimental Design Methods

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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 plantarum* 213 inhibited the growth of *Bordetella bronchiceptica* which could instigate infection of porcine nasitis.

In this study, medium composition of *L. plantarum* 213 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 10g/L skim milk, 20g/L fructose, 10g/L whey and 5g/L yeast extract. and, during batch cultivation, the highest viable cell count reached to 5.2×10^9 cfu/mL and antimicrobial activity against *Bordetella bronchiceptica* was doubled. pH and D.O. were maintained at 5.5 and 20% respectively.

References

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