

The Instability of TetM Gene Encode Tetracycline Resistance Gene in Lactobacillus casei FNCC 0090

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Abstract : Bacteria ability to survive in antibiotic is controlled by the presence of gene that encodes the antibiotic resistance protein. The instability of the antibiotic resistance gene can be observed by exposing the bacteria under the lethal dose of antibiotic. Low concentration of antibiotic can induce mutation, which may take a role in bacterial adaptation through the antibiotic concentration. Lactobacillus casei FNCC 0090 is one of the probiotic bacteria that has an ability to survive in tetracycline by expressing the tetM gene. The aims of this study are to observe the possibilities of mutation happened in L.casei FNCC 0090 by exposing in sub-lethal dose of tetracycline and also observing the instability of the tetM gene by comparing the sequence between the wild type and mutant. L.casei FNCC 0090 has a lethal dose in 60 µg/ml, low concentration is applied to induce the mutation, the range from 10 µg/ml, 15 µg/ml, 30 µg/ml, 45 µg/ml, and 50 µg/ml. L.casei FNCC 0090 is exposed to the low concentration from lowest to the highest concentration to induce the adaptation. Plasmid is isolated from the highest concentration culture which is 50 µg/ml by using modified alkali lysis method with the addition of lysozyme. The tetM gene is isolated by using PCR (Polymerase Chain Reaction) method, then PCR amplicon is purified and sequenced. Sequencing is done on both samples, wild type and mutant. Both sequences are compared and the mutations can be traced in the presence of nucleotides changes. The changing of the nucleotides means that the tetM gene is instable.

Keywords : L. casei FNCC 0090, probiotic, tetM, tetracycline

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