

Genome shuffling is an important method for rapid improvement in microbial strains for desired phenotypes. In this study, ultraviolet irradiation and nitrosoguanidine were used as mutagens to enhance the adhesion of the wild-type *Lactobacillus plantarum* C88. Four strains with better property were screened after mutagenesis to develop a library of parent strains for three rounds of genome shuffling. Fusants F3-1, F3-2, F3-3, and F3-4 were screened as the improved strains. The *in vivo* and *in vitro* tests results indicated that the population after three rounds of genome shuffling exhibited improved adhesive property. Random Amplified Polymorphic DNA results showed significant differences between the parent strain and recombinant strains at DNA level. These results suggest that the adhesive property of *L. plantarum* C88 can be significantly improved by genome shuffling. Improvement in the adhesive property of bacterial cells by genome shuffling enhances the colonization of probiotic strains which further benefits to exist probiotic function.

RAPD analysis of *L. plantarum* C88 and fusants F3-1, F3-2, F3-3, and F3-4. Primers Z3, Z4, Z5, Z6, Z7, Z8, Z9, Coc, and OPA-3 were used in this test.

