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U.V. MUTAGENESIS

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GALACTOSIDASE PRODUCING LACTIC ACID BACTERIA AND THEIR
PRODUCTION ENHANCEMENT THROUGH U.V. MUTAGENESIS.
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A total of 42 strains of lactic acid bacteria were selected from stock culture, which were previously isolated from fermented foods. The preliminary screening for β -galactosidase activity was done using ONPG-disc, in which twenty-one strains gave strong positive color after 24-48 hours of incubation. The quantitative study was done by colorimetric assay. Three strains with high activity, *Lactobacillus fermentum* 71, *Lactobacillus brevis* 76, and *Lactobacillus brevis* 89, were chosen for U.V. mutagenesis study to select for mutants with increased enzyme activity. They were exposed to U.V. radiation at different distances and times. The survivors were selected randomly and tested for activity of enzyme in comparison to their respective wild types. Eight derivative strains of *L. fermentum* 71 and seven derivative strains of *L. brevis* 76 were selected for their higher enzyme activity, which was increased at least 3 fold. They were then reexposed to U.V. irradiation. Random selection and test for activity of enzyme were done once again. After the enzyme stability study, six strains were finally selected, namely, *L. fermentum* 71.11, *L. fermentum* 71.11.7, *L. fermentum* 71.11.9, *L. fermentum* 71.23, *L. brevis* 76.29, and *L. brevis* 76.29.67. In all six of these strains, enzyme activity increased at least 4 fold.

These 6 strains were also tested for any altered characteristics, such as bile salt tolerance, heat tolerance, acid tolerance, smooth surface adherence, antimicrobial activity, and general biochemical reactions in comparison to their respective wild types. The results showed that, with the exception of higher enzyme activity, the characteristics tested were unaltered. Of these strains, *L. fermentum* 71.11.7, *L. fermentum* 71.11.9, and *L. brevis* 76.29.67 gave the enzyme activity which was at least 10 times more than their parental wild types.