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Effects of *Bacillus polyfermenticus* SCD on MNNG induced - DNA damage in human peripheral lymphocytes using Comet assay

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Recently, the morbidity and mortality of colon cancer is increasing in Korea because of the westernized eating habit. The probiotics such as lactic acid bacteria (LAB) have been known to play an important role in retarding colon carcinogenesis by possibly influencing metabolic, immunologic and protective functions in the colon. *Bacillus polyfermenticus* SCD, which is commonly called as Bisroot strain, is used as hosts in the bioindustry and has several human health benefits. However, the anti-cancer effect of *Bacillus polyfermenticus* SCD has not been investigated yet. Therefore, we evaluated the effect of *Bacillus polyfermenticus* SCD (vegetative cell and spore cell) on a direct carcinogen, N-methyl-N-nitro-N-nitrosoguanidine (MNNG) induced DNA damage in human peripheral lymphocytes. The vegetative cell and spore cell of *B. polyfermenticus* resuspended in HBSS buffer were preincubated with MNNG (50μg /ml) for 30 min at 37℃. After centrifugation, aliquots of the supernatants were used for lymphocyte treatment for 30 min at 37℃. Using the Comet assay to detect DNA damage, we found that both vegetative cell and spore cell of *B. polyfermenticus* prevented DNA damage induced by MNNG in human peripheral lymphocytes. The preventive effect of *B. polyfermenticus* became more effective as increasing the concentration of strains. These results indicate that *B. polyfermenticus* may inactivate the carcinogen and thus protect lymphocytes from genotoxic damages.