Tolerance of Probiotic Supplements to Low pH

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ABSTRACT

Probiotics are well known for their prophylactic and therapeutic effects. In order to exhibit such effect, probiotics should survive during the gastric transit and remain viable in high numbers $(>10^6 \text{ CFU/g})$ in the gastrointestinal tract upon consumption. As such, the initial criterion is that the probiotics must tolerate the low pH in the stomach. The present study was undertaken to enumerate the viable cell count of probiotic supplements upon reaching consumer and to evaluate its tolerance to acidic condition, simulating the human gastric pH. The viable cell count was enumerated by total plate count method and tested with acidified-phosphate buffer saline at pH 2, 3, 4 and 6 for 3 hours exposure. From the study, all the products did not meet the claimed viability on the label. Product A contained 7.37 log10 CFU/g. product B contained 9.82 log₁₀ CFU/g and product C contained 4.79 log₁₀ CFU/g of total anaerobes, respectively. However, product A and B contained more than 10° CFU/g whereas product C contained less than 10⁶ CFU/g. Probiotics of product A, B and C survived the pH 6. Probiotics of product A and B survived the pH 2, 3, and 4 whereas product C did not. Probiotics product B has the highest tolerance to low pH as compared to product A and C. The variation in the level of acid tolerance was influenced by the strain of probiotics, the pretreatment of probiotics before undergo processing and the mechanisms of the acid tolerance involved.

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