

Basic Characteristics of Sporolactobacillus inulinus

BCRC 14647 for Potential Probiotic Properties

Hui-Ying Huang, Shih-Yi Huang, Pei-Yu Chen, V. An-Erl King, Yeu-Pyng Lin and
Jen-Horng Tsen

Huang HY;Huang SY;Chen PY;King VAE;Lin YP;Tsen JH

Abstract

The basic characteristics of the spore-forming lactic acid bacterium, *Sporolactobacillus inulinus* BCRC 14647, was evaluated in vitro for its potential probiotic properties. Assessments including acid and bile salt tolerance, adhesiveness, and antagonistic effects on pathogenic *Salmonella enteritidis* BCRC 10744, as well as inhibition factors of spent culture supernatant (SCS) and an invasion assay, were conducted using *Lactobacillus acidophilus* BCRC 10695 and two bifidobacteria (*Bifidobacterium bifidum* BCRC 14615 and *B. longum* BCRC 11847) as a reference. In the results, *S. inulinus* spores presented significantly higher survival rates than the vegetative cell form in acidic conditions as well as the reference bifidobacteria. However, *L. acidophilus* showed the highest viability among all tested strains. Similar results were found in the bile tolerance test. Compared with the reference strains, the vegetative cell form of *S. inulinus* possessed a proper adhesive characteristic (71.7 bacteria/field for *S. inulinus* and 91.3 and 45.7 bacteria/field for *B. bifidum* and *B. longum*, respectively). In the adhesion assay, both the spore form of *S. inulinus* (17.1 bacteria/field) and the negative control, *L. bulgaricus* BCRC 14009 (5.9 bacteria/field), displayed nonadhesive traits. The vegetative cells of *S. inulinus* and its SCS both dramatically decrease the adhesion of *S. enteritidis* to Caco-2 cells; meanwhile, the SCS of *S. inulinus* vegetative cells inhibited the growth of *S. enteritidis* in the inhibition zone test. The existing inhibition factor could be assumed to be lactic acid in the SCS. From the results of the invasion assay, *S. inulinus* showed high safety properties. In conclusion, based on these in vitro evaluations, results suggest that *S. inulinus* presents probiotic features of great potential in the vegetative cell form.