Probiotics

Probiotics are live microorganisms promoted with claims that they provide health benefits when consumed, generally by improving or restoring the gut flora. Probiotics are considered generally safe to consume but may cause bacteria-host interactions and unwanted side effects in rare cases.

Although probiotics have been isolated from different sources, few were isolated from traditional Chinese medicine. The current study first isolates Pulsatilla Radix-utilizing Pediococcus pentosaceus PR-1 from human feces. Subsequently, the tolerance of PR-1 to low pH, bile salts, simulated gastric juice, succus entericus, antioxidant activity, antimicrobial activity, cholesterol assimilation, and antibiotics susceptibility was investigated. After 2 h incubation at pH 2.0, over 80% of PR-1 survived. The cell viability of PR-1 at 2 h under 0.1% bile salt condition was 99.2%. The survival rate of PR-1 in gastric juice and succus entericus were 64.48% and 81.86, respectively. Cell-free supernatant of PR-1 culture also showed antimicrobial activity against Escherichia coli, Staphylococcus aureus, and Salmonella typhimurium. Besides, the antioxidant activity of PR-1 CFS was significantly greater than the cell pellet. PR-1 was shown resistant to kanamycin, streptomycin, vancomycin, and norfloxacin and able to lower cholesterol levels to 72.5 ± 1.5%. In addition, PR-1 displayed γ-hemolysis and was non-pathogenic [1].

Antipsychotic-induced weight gain is associated with alterations to the composition of the gut microbiota. The purpose of the study was to determine the effect of probiotics plus dietary fiber on antipsychotic-induced weight gain.

Study design: Two sequential, randomized clinical trials were conducted. In Study 1, 90 drug-naïve, first-episode schizophrenia patients were randomized to receive either olanzapine plus probiotics or olanzapine monotherapy for 12 weeks. In Study 2, 60 drug-naïve, first-episode schizophrenia patients were randomly assigned to receive either olanzapine plus probiotics and dietary fiber or olanzapine monotherapy for 12 weeks.

Study results: In Study 1, no significant differences in weight gain were observed between the two groups. The insulin resistance index (IRI) was lower in the olanzapine plus probiotics group compared with the olanzapine monotherapy group at week 12 (estimated mean difference, -0.65, [95% confidence interval (CI), -1.10 to -0.20]; p = .005). In Study 2, weight gain was lower in the probiotics plus dietary fiber group than in the olanzapine monotherapy group at week 12 (estimated mean difference -3.45 kg, [95% CI, -5.91 to -1.00]; p = .007). At week 12, IRI increased significantly in the olanzapine monotherapy group (mean, 1.74; standard deviation (SD) = 1.11, p < .001), but not in the olanzapine plus probiotics and dietary fiber group (mean 0.47, SD = 2.16, p = .35) with an estimated mean difference of -0.95 between the two groups [95% CI, -1.77 to -0.14]; p = .022).

These results provide support for the efficacy and safety of probiotics plus dietary fiber in attenuating antipsychotic-induced weight gain in drug-naïve, first-episode schizophrenia patients [2].

1)

Liu Y, Sun X, Zhang J, Gao F, Yu L, Dong L, Zhang G, Wu C. Isolation and characterisation of Pulsatilla Radix-utilizing bacteria Pediococcus pentosaceus PR-1 from human faeces. FEMS Microbiol Lett. 2022 Sep 7:fnac089. doi: 10.1093/femsle/fnac089. Epub ahead of print. PMID: 36073496.

2)
Huang J, Kang D, Zhang F, Yang Y, Liu C, Xiao J, Long Y, Lang B, Peng X, Wang W, Wang X, Liu F, Davis JM, Zhao J, Wu R. Probiotics Plus Dietary Fiber Supplements Attenuate Olanzapine-Induced Weight Gain in Drug-Naïve First-Episode Schizophrenia Patients: Two Randomized Clinical Trials. Schizophr Bull. 2022 May 15:sbac044. doi: 10.1093/schbul/sbac044. Epub ahead of print. PMID: 35569003.