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PROBIOTICS, PREBIOTICS
& NEW FOODS, NUTRACEUTICALS AND BOTANICALS
for NUTRITION & HUMAN and MICROBIOTA HEALTH

VN POPOLO DI POETI DI ARTISTI DI EROI
DI SANTI DI PENSATORI DI SCIENZIATI
DI NAVIGATORI DI TRASMIGRATORI

INHIBITORY ACTIVITY OF VAGINAL LACTOBACILLUS SPP. STRAINS BY BACTERIOCIN PRODUCTION

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OBJECTIVE

Probiotics represent a complementary and integrative therapy that is useful in the treatment and prevention of urogenital infections in women. Our study focused on characterization of *Lactobacillus spp* strains isolated from healthy vaginal ecosystems to determine their probiotic properties in order to restore and maintain vaginal health.

METHODS

22 *Lactobacillus spp*, isolated from 42 healthy women were screened by deferred antagonism test on M.R.S. Agar with 0.1% CaCO₃. 15 strains showing antagonistic activity, identified by *tuf* gene sequencing, were characterized for: i) the presence of bacteriocin-encoding genes by PCR, ii) the ability to produce H₂O₂ by Eschenbach method and iii) the antibiotic susceptibility profiles by E-test.

RESULTS

Out of 22 *Lactobacillus spp*, only 15 (7 *L.gasseri*; 5 *L.crispatus*, 1 *L. fermentum* and 1 *L.delbrueckii*, 1 *Lactobacillus spp*) showed a total inhibitory activity against *S.agalactiae*, *E.coli*, *K.pneumoniae*, *S aureus*, *E.faecalis* and *E.faecium*, representing the main vaginal pathogens. 13/15 strains inhibited *C.albicans* while only 3/15 showed a weak activity against *C.glabrata*. 6/15 strains resulted positive for *helveticin J* and *acidocin A*. 14/15 isolates produced hydrogen peroxide at different levels. The antibiotic susceptibility profiles showed full sensitivity to ampicillin, amoxicillin clavulanic, tetracyclines, chloramphenicol, erythromycin, rifampin.

CONCLUSIONS

In our study, we detected 15 candidate strains to develop a new vaginal formulation that may provide an alternative approach in the prevention and treatment of vaginal infections.

IMPACT OF THE TRADITIONAL ALPINE CHEESE MICROBIOTA ON METABOLIC RISK FACTORS

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OBJECTIVE

Metabolic syndrome is characterized by several cardio-metabolic risk factors including obesity, hypertension, insulin resistance, and is related to the risk of developing type 2 diabetes (T2D). The discovery of new molecules, which can be used as safe alternative to drugs and improve the glucose metabolism, will reduce the incidence of T2D. The aim of the study was to test the ability of alpine cheese-resident lactic acid bacteria to produce health-promoting metabolites, such as gamma-aminobutyric acid (GABA) and conjugated linoleic acids (CLA).

METHODS

Lactobacillus brevis FEM 1874, previously reported as GABA producer strain, was tested in vivo on mice suffering obesity and T2D. One hundred-eight lactic acid bacteria strains isolated from alpine cheese were screened for the ability to make linoleic acid bio-hydrogenation in MRS medium by a rapid spectrophotometric method. The best one was tested for its ability to produce CLA in humans by fecal fermentations through a human gastro-intestinal model.

One hundred-eight lactic acid bacteria strains isolated from Trentino alpine cheese were screened for the ability to make linoleic acid bio-hydrogenation in MRS medium by a rapid spectrophotometric method. The best one was tested for its ability to produce CLA in humans, performing fecal fermentations in a human gastro-intestinal model.

RESULTS

Lb. brevis FEM 1874 survived gastro-intestinal digestion and showed some physiological effect into the animals. *Pediococcus pentosaceus* St5m was the best CLA producing strain and produced 0.3 mg/mL CLA.

CONCLUSIONS

This study demonstrates that microbiota from traditional mountain products harbors great health-promoting properties and is able to produce bioactive metabolites. This would contribute to the development of new multifunctional foods, enriched with bio-functional molecules.