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The effect of compound Lactobacillus on the reproductive tract of childbearing-aged women

Submission date
05/05/2023

Recruitment status
No longer recruiting

Registration date
10/05/2023

Overall study status
Completed

Last Edited
03/11/2025

Condition category
Urological and Genital Diseases

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol
Background and study aims
The microorganisms of the reproductive tract are critical to women's reproductive health, and the vaginal microorganisms of healthy women of reproductive age are dominated by the bacteria Lactobacillus. Studies have shown that clinically confirmed or unexplained vaginal infectious diseases are associated with an imbalance in vaginal microbes. The study will evaluate the effect of compound lactic acid bacteria in regulating the symptoms and indicators of reproductive tract health, will evaluate the colonization of vaginal strains after oral administration of three strains, will analyze the change of vaginal microorganisms, and also discuss the potential mechanism of the effect of probiotic strains on the vaginal environment.

Who can participate?
Women aged 18-55 years with a vaginal pH of over 4.5

What does the study involve?
Participants will be randomly allocated to the intervention group or the control group. The intervention and control groups receive one sachet of probiotic solid drink or placebo (dummy) orally with meals daily for one menstrual cycle without interruption during menstruation. Participants are required to take stool and vaginal discharge samples before the intervention, on day 14, and at the intervention of one menstrual cycle, and to complete the research questionnaire before the intervention, on day 7, day 14, day 21, and at the intervention of one menstrual cycle.

What are the possible benefits and risks of participating?
The intervention may help regulate the vaginal micro-ecosystem and promote reproductive tract health. Participants in the control group may have no direct benefits. The main risk of the study is that symptoms such as bloating and diarrhea will occur briefly at the beginning of the intervention and will disappear after a short time.

Where is the study run from?
BGI Precision Nutrition (Shenzhen) Technology Co., Limited (China)

When is the study starting and how long is it expected to run for?
December 2022 to September 2024

Who is funding the study?
BGI Precision Nutrition (Shenzhen) Technology Co., Limited (China)

Who is the main contact?
Dr Yajie Xiao, xiaoyajie@genomics.cn

Contact information

Type(s)
Principal investigator

Contact name
Dr Yajie Xiao

Contact details
Floor 6
Building 11
Beishan industrial zone
Yantian Street
Shenzhen
China
518000
+86(0)15018520795
xiaoyajie@genomics.cn

Additional identifiers

Study information

Scientific Title
The effect of compound Lactobacillus on the reproductive tract of childbearing-aged women: a prospective, randomized, double-blind controlled study

Study objectives
1. Lactobacillus compound is more effective than placebo in lowering vaginal pH in sub-healthy women ($p<0.05$)
2. Lactobacillus compound is more effective than placebo in increasing the relative abundance of Lactobacillus in the vagina ($p<0.05$)
3. Lactobacillus compound is more effective than placebo in increasing the relative abundance of the three vaginal species ($P<0.05$)
4. Lactobacillus compound is more effective than placebo in increasing the relative abundance of Lactobacillus in the feces ($P<0.05$)
5. Lactobacillus compound increases the relative abundance of the three species in the feces better than placebo ($P<0.05$)
6. Lactobacillus compound is well tolerated and the incidence of product-related adverse events is not higher than placebo ($P<0.05$)

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 13/04/2023, The Institutional Review Board of BGI (Comprehensive Building, Beishan Industrial Zone, Yantian District, Shenzhen, Guangdong, China; +86 (0)75536307890; bgi-irb@genomics.cn), ref: BGI-IRB 23056

Primary study design
Interventional

Study design
Interventional double-blinded randomized controlled trial

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Women with a vaginal pH greater than 4.5

Interventions
Current interventions as of 03/11/2025:

Participants will be randomly allocated to the intervention group or the control group. The researcher will generate a random sequence with a random number table. The envelope method is used to carry out concealed allocation: 116 opaque envelopes are taken, the envelopes are marked with the number of the injection group, and the grouping information according to the randomisation form is indicated in the envelopes, and the envelopes are sealed. After the participants are enrolled in the group in sequence, the researchers open the envelopes one by one, determine the grouping of the patients according to the distribution plan in the envelope, and extract the corresponding products.

Participants in the intervention group will receive compound Lactobacillus one sachet/day, while participants in the control group will receive a placebo one sachet/day. Participants take the sachet orally with meals daily for one menstrual cycle without interruption during menstruation. Participants are required to take stool and vaginal discharge samples before the intervention, day 14, and at the intervention of one menstrual cycle, and to complete the research questionnaire before the intervention, on day 7, day 14, day 21, and at the intervention of one menstrual cycle.

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Previous interventions:

Participants will be randomly allocated to the intervention group or the control group. The researcher will generate a random sequence with a random number table. The envelope method is used to carry out concealed allocation: 116 opaque envelopes are taken, the envelopes are marked with the number of the injection group, and the grouping information according to the randomisation form is indicated in the envelopes, and the envelopes are sealed. After the

participants are enrolled in the group in sequence, the researchers open the envelopes one by one, determine the grouping of the patients according to the distribution plan in the envelope, and extract the corresponding products.

Participants in the intervention group will receive compound Lactobacillus one sachet/day, while participants in the control group will receive a placebo one sachet/day. Participants take the sachet orally with meals daily for one menstrual cycle without interruption during menstruation. Participants are required to take stool and vaginal discharge samples before the intervention, on day 7, day 14, and 2-3 days after the end of the next menstrual period, and to complete the research questionnaire before the intervention, on day 7, day 14, day 21, and 3-5 days after the end of the next menstrual period.

Intervention Type
Supplement

Primary outcome(s)
Current primary outcome measures as of 03/11/2025:

Vaginal pH values are measured using a self-testing vaginal pH kit at baseline, 7, 14, 21, and at the intervention of one menstrual cycle.

Previous primary outcome measures:

Vaginal pH values are measured using a self-testing vaginal pH kit at baseline, 7, 14, 21, and 2-3 days after the next menstruation

Key secondary outcome(s)
Current secondary outcome measures as of 03/11/2025:

1. The relative abundance and increase of the three strains in virginal discharge will be measured using vaginal discharge collection kits at baseline, day 14, and at the intervention of one menstrual cycle.
2. The abundance and increase of Lactobacillus in virginal discharge will be measured using vaginal discharge collection kits at baseline, day 14, and at the intervention of one menstrual cycle.
3. The detected rate and abundance of the virginal particular pathogen will be measured using vaginal discharge collection kits at baseline, day 14, and at the intervention of one menstrual cycle.
4. The increase and relative abundance of the three strains in feces will be measured using fecal collection kits at baseline, day 14, and at the intervention of one menstrual cycle.
5. The relative abundance and increase of Lactobacillus in feces will be measured using fecal collection kits at baseline,day 14, and at the intervention of one menstrual cycle.
6. The comparison of alpha-diversity of the fecal microbiota will be measured using fecal collection kits at baseline, day 14, and at the intervention of one menstrual cycle.
7. The increase of the relative abundance of short-chain fatty acid producing bacteria in gut microbiota will be measured using fecal collection kits at baseline, day 14, and at the intervention of one menstrual cycle.

Previous secondary outcome measures:

1. The relative abundance and increase of the three strains in virginal discharge will be measured using vaginal discharge collection kits at baseline, 7, and 2-3 days after the next menstruation
2. The abundance and increase of Lactobacillus in virginal discharge will be measured using vaginal discharge collection kits at baseline, 7, and 2-3 days after the next menstruation
3. The detected rate and abundance of the virginal particular pathogen will be measured using vaginal discharge collection kits at baseline, 7, and 2-3 days after the next menstruation
4. The increase and relative abundance of the three strains in feces will be measured using fecal collection kits at baseline, 7, and 2-3 days after the next menstruation
5. The relative abundance and increase of Lactobacillus in feces will be measured using fecal collection kits at baseline, 7, and 2-3 days after the next menstruation
6. The comparison of alpha-diversity of the fecal microbiota will be measured using fecal collection kits at baseline, 7, and 2-3 days after the next menstruation
7. The increase of the relative abundance of short-chain fatty acid producing bacteria in gut microbiota will be measured using fecal collection kits at baseline, 7, and 2-3 days after the next menstruation

Completion date
30/09/2024

Eligibility

Key inclusion criteria
1. Non-menopausal women aged 18-55 years
2. Self-test vaginal pH value over 4.5 at 2 or 3 days after menstruation
3. Willing to stop consuming probiotic supplements (yoghurt excluded) within 1 week of enrollment and to stop consuming fiber supplements during the intervention
4. Sign the informed consent

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Upper age limit
55 Years

Sex
Female

Total final enrolment
192

Key exclusion criteria
1. Menopause
2. Pregnancy, latency, and prepared pregnancy
3. Systemic antibiotic exposure 1 week before enrollment
4. Diagnosed with the systematic disease
5. History of gastrointestinal surgery or cancer
6. Diagnosed with the reproductive disease
7. Atopic, or allergy to the known ingredient of the product

Date of first enrolment
01/06/2023

Date of final enrolment
01/08/2024

Locations

Countries of recruitment
China

Study participating centre
BGI Genomics Co., Ltd. BGI Youkang out-patient department
1101-1105, Unit 1, Building 1
Shenyan Road
Haishan Street
Yantian District
Shenzhen
China
518000

Sponsor information

Organisation
BGI Precision Nutrition (Shenzhen) Technology Co., Limited

Funder(s)

Funder type
Industry

Funder Name
BGI Precision Nutrition (Shenzhen) Technology Co., Limited

Results and Publications

Individual participant data (IPD) sharing plan
The researchers will upload all the biometric information to databases and provide all the clinical phenotype data of participants after the research article is published

IPD sharing plan summary
Published as a supplement to the results publication