Study evaluates the effectiveness of lactobacilli throat sprays against COVID-19

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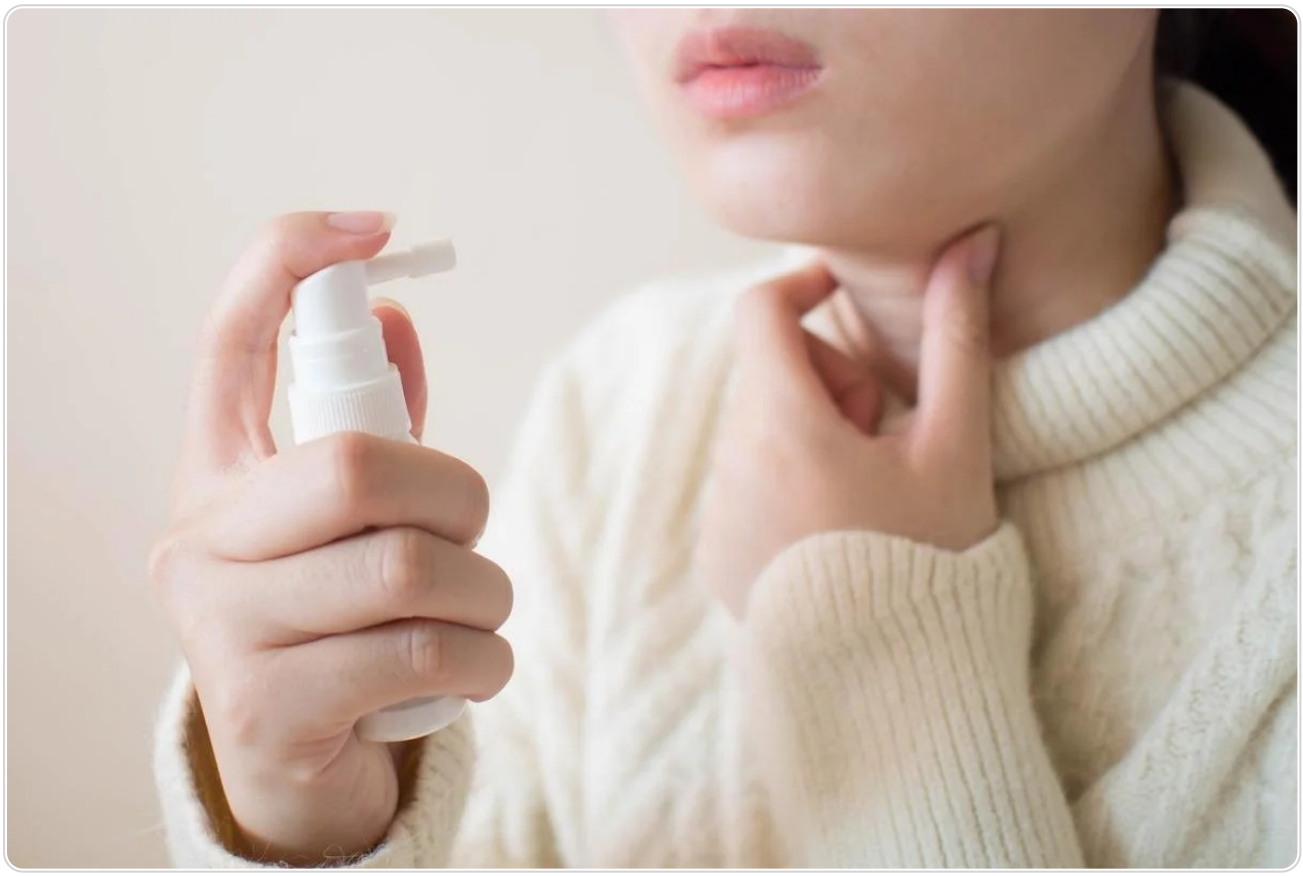
A recent study posted to the *medRxiv** preprint server evaluated the effectiveness of lactobacilli throat sprays against coronavirus disease 2019 (COVID-19).



Study: Evaluation of a throat spray with lactobacilli in COVID-19 outpatients in a randomized, double-blind, placebo-controlled trial for symptom and viral load reduction. Image Credit: Orawan Pattarawimonchai/Shutterstock

Background

Various studies have noted the adverse impact of respiratory viral diseases, like severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections, on outpatients with imbalanced immune activation, severe inflammation, and

respiratory tissue disruption. This necessitates the development and implementation of therapeutic or prophylactic measures against COVID-19.

About the study

The present study examined the clinical efficiency of a throat spray containing *Lacticaseibacillus casei* AMBR2, *Lactiplantibacillus plantarum* WCFS1, and *Lacticaseibacillus rhamnosus* GG against COVID-19 in mildly symptomatic outpatients.

The team performed a placebo-controlled, double-blind clinical trial on COVID-19 outpatients who tested polymerase chain reaction (PCR)-positive within 96 hours before the trial. The patients used a verum spray or a placebo spray over 14 days. A follow-up was conducted for a week, wherein online questionnaires were answered by the participants.

Ten common SARS-CoV-2 symptoms were surveilled throughout the study, and the summary scores for different symptoms were compared for the verum and the placebo groups. The time required for the patient's symptoms to improve was assessed according to the time point when the patients attained their symptomatic tipping point.

Self-sampled throat or nose swabs were collected to perform microbiome analysis, determine SARS-CoV-2 viral loads, detect administered Lactobacillaceae strains through quantitative PCR (qPCR), and perform amplicon sequencing. The team also obtained blood finger-prick samples for the analysis of SARS-CoV-2 immunoglobulin G (IgG) antibodies.

Change in COVID-19 disease severity post-treatment with the microbiome spray was the study's primary outcome. The secondary outcomes were the change in time taken for COVID-19 symptoms to improve, the difference in SARS-CoV-2 particle levels in the outpatients, the alteration in the number of specific bacterial pathogens, and the change in nose or throat microbiome.

The study was followed by posthoc analyses that investigated the association between viral load and reported COVID-19 symptoms, the impact of the presence of administered strains in human airways, and the effect of several variables on the microbiome.

Results

The study results showed that out of the 78 patients eligible for the study, 41 were randomly assigned to the verum treatment group and 37 to the placebo group. Overall, both the sprays were well tolerated; however, the verum group reported unpleasant taste and texture while the placebo group noted only the disagreeable texture of the spray. Approximately 31% of the total participants were fully compliant in completing their online questionnaires, while these online diaries were found to be complete on 20 out of the 21 days of the study period. Almost 80.5% of the participants self-sampled nose and throat swabs, while 83.5% provided finger-prick blood samples.

At the beginning of the study, 68% of patients reported having a cough, 70% had a runny or blocked nose, 65% had a headache, and 75% experienced fatigue. Also, the average total symptom score at the same time was 15.2 ± 9.3 in the placebo group and 13.4 ± 8.6 in the verum group. Similar symptom severities were observed in both the treatment and the placebo groups, while the time taken for the symptoms to improve had no significant differences between the two groups with respect to the total, upper respiratory tract (URT), system, and acute scores. Across both the groups, 59% of the total participants experienced symptoms 21 days after COVID-19 diagnosis, with 5% having acute symptoms, 39% showing systemic symptoms and 41% suffering from URT symptoms.

One week into the trial, 73% and 77% of the verum and placebo groups tested qPCR-positive for COVID-19, while 17% and 32% tested positive after two weeks, respectively. Furthermore, at the end of the study, 6.7% of the verum group and 26% of the placebo group tested SARS-CoV-2 positive. Also, while a significant correlation was observed between the presence of symptoms and COVID-19-positivity, symptoms like cough and fatigue were reported even after a PCR-negative result.

Analysis of finger-prick blood samples collected at the beginning of the study showed that around 6.5% of the COVID-19 patients were either positive or borderline positive for the presence of anti-SARS-CoV-2 IgG. However, at the end of the study, almost 84% of the participants had anti-SARS-CoV-2 IgG, with no significant differences observed between the verum and the placebo groups.

Conclusion

The study findings showed that throat sprays containing lactobacilli strains could be effectively used against COVID-19 as this treatment method lowered respiratory viral loads and, in turn, reduced viral transmission. The researchers believed that extensive future studies could investigate the effectiveness of this method in decreasing household transmission of SARS-CoV-2 infections.

*Important notice

medRxiv publishes preliminary scientific reports that are not peer-reviewed and, therefore, should not be regarded as conclusive, guide clinical practice/health-related behavior, or treated as established information.

Journal reference:

- De Boeck, I. et al. (2022) "Evaluation of a throat spray with lactobacilli in COVID-19 outpatients in a randomized, double-blind, placebo-controlled trial for symptom and viral load reduction". *medRxiv*. **doi**: 10.1101/2022.03.17.22272401. https://www.medrxiv.org/content/10.1101/2022.03.17.22272401v1

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Bhavana Kunkalikar is a medical writer based in Goa, India. Her academic background is in Pharmaceutical sciences and she holds a Bachelor's degree in Pharmacy. Her educational background allowed her to foster an interest in anatomical and physiological sciences. Her college project work based on 'The manifestations and causes of sickle cell anemia' formed the stepping stone to a life-long fascination with human pathophysiology.