

Yeast used in production of cachaça can prevent asthma, study shows

February 22 2023, by Julia Moióli



Petri dish with *Saccharomyces cerevisiae* UFMG A-905 yeast. Credit: Marcos de Carvalho Borges

A daily dose of a strain of brewer's yeast used to produce cachaça (distilled spirit made from fermented sugarcane juice) can act as a preventive against asthma, according to a Brazilian study involving male mice. The results are reported in an article published in the journal *Probiotics and Antimicrobial Proteins*. The authors are researchers at the University of São Paulo (USP) and the Federal University of Minas Gerais (UFMG). The yeast strain used in the study was *Saccharomyces cerevisiae* UFMG A-905.

Asthma is a common lung condition that causes breathing difficulties. It affects some 334 million people of all ages worldwide. It often starts in childhood and is characterized by inflammation of the airways, airflow limitation and bronchial remodeling.

Despite increasing interest in the use of probiotics to prevent or treat allergies and various skin, gastrointestinal and [neurological diseases](#), more research is needed to determine the ideal dose and administration regime to assure the desired benefits.

S. cerevisiae UFMG A-905, widely used in the production of beer and bread as well as cachaça, is a well-known probiotic and can attenuate the symptoms of asthma in animal models. This has been known for some time, but details of how best to use it have been lacking. The new study shows that the ideal daily dose is 10 billion (10^9) colony-forming units per milliliter (CFU/mL). For comparison, there are 16 billion CFUs in 65 mL of Yakult fermented milk.

"It's important to understand that probiotics work like medication. Taking them occasionally or in the wrong amount is useless," said Marcos de Carvalho Borges, a professor of clinical medicine at the Ribeirão Preto Medical School (FMRP-USP) and last author of the

article.

The study involved analysis of the effects of administering a daily dose of 100 microliters (μL) for 27 consecutive days as a solution containing the probiotic at three different concentrations: 10^7 , 10^8 and 10^9 CFU/mL. The researchers also investigated the effects of administering 100 μL of the solution with 10^9 UFC/mL of *S. cerevisiae* UFMG A-905 three times a week on alternate days for five weeks.

Male laboratory mice were intraperitoneally sensitized and nasally challenged with ovalbumin to induce allergic airway inflammation. They were fed the yeast via a tube leading down the throat to the stomach (gavage).

The researchers, who are affiliated with FMRP-USP and UFMG's Institute of Biological Sciences, discovered that both daily administration of the probiotic and administration on alternate days significantly reduced bronchial hypersensitivity in comparison with the control group, which was given only saline solution. Bronchial hypersensitivity is excessive constriction of the airways in response to a stimulus and is one of the main characteristics of asthma.

However, only daily administration of the highest dose reduced airway inflammation in the asthmatic mice. "We measured the degree of inflammation in terms of eosinophil count and interferon levels," Borges said.

Eosinophils are immune system cells, and interferons also help the body fight infection. Both are markers of asthmatic inflammation. "They were both considerably reduced in the mice treated with the probiotic. We concluded that *S. cerevisiae* isolated from artisanal cachaça has significant potential to prevent asthma only if a high dose is taken every day."

Airway and lung inflammation was not significantly reduced by administration of the probiotic either daily or on alternate days at concentrations of 10^7 and 10^8 UFC/mL. "From the public policy standpoint, having a natural product like a probiotic, which has practically no [side-effects](#), with the potential to prevent a health problem as widespread as asthma is very important," Borges said.

Ideal form of ingestion

Following the trial in an animal model, the researchers plan to find out whether the [probiotic](#) has the same beneficial effects in humans and, if so, to investigate the mechanisms involved using fermented food products rather than a simple capsule with the solution.

Bread containing the yeast has been developed and found to have a similar preventive effect in master's research supervised by Borges in partnership with colleagues at UFMG and the State University of Campinas (UNICAMP). The product has been patented and will soon be reported on in scientific journals.

More information: Thamires M. S. Milani et al, Dose–Response Effect of *Saccharomyces cerevisiae* UFMG A-905 on the Prevention of Asthma in an Animal Model, *Probiotics and Antimicrobial Proteins* (2022). [DOI: 10.1007/s12602-022-10014-w](https://doi.org/10.1007/s12602-022-10014-w)

Provided by FAPESP

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