



ELSEVIER



NEWS RELEASE FOR IMMEDIATE RELEASE

Media contacts:

Eileen Leahy
Elsevier
+1 732 238 3628
jdsmedia@elsevier.com

Ken Olson, PhD, PAS
American Dairy Science Association®
+1 630 237 4961
keolson@prodigy.net

New sophisticated simulation models can help reduce yogurt spoilage by yeast

Models to characterize and accurately predict yeast growth have the potential to reduce economic losses due to food waste and influence management decisions in the yogurt industry, according to a new report in the Journal of Dairy Science®

Philadelphia, August 23, 2021 – Spoilage of yogurt by yeast poses a problem for the dairy industry that includes economic losses from wasted product. Understanding the effects of factors such as storage conditions, yeast species, and bioprotective cultures on yeast spoilage can help yogurt producers make decisions that improve quality and minimize loss. In an [article](#) appearing in the *Journal of Dairy Science®*, scientists from the University of Copenhagen, Chr. Hansen A/S, and Cornell University developed predictive models that evaluate the effects of a bioprotective culture on yogurt spoilage.

Between 11% and 25% of dairy products are wasted globally, in part due to fungal spoilage. One method to reduce fungal spoilage is to add food cultures known to have bioprotective effects that delay growth of unwanted microorganisms during shelf life. The authors of this study were the first to develop Monte Carlo simulation models to estimate yogurt spoilage caused by yeast that included the initial contamination level, different yeast species, storage conditions, and the addition of food cultures with bioprotective effects.

“These predictive models allowed for prediction of yogurt spoilage caused by different yeast species, as well as the effect of including bioprotective culture in a yogurt product to reduce yeast spoilage,” said first author Line Nielsen, PhD, Department of Food Science, University of Copenhagen, Frederiksberg, Denmark. “Such models can help yogurt producers understand how different parameters influence product quality and use these results to support decision making in yogurt quality management.”



Caption: Scientists from the University of Copenhagen, Chr. Hansen A/S, and Cornell University developed predictive models to evaluate the effects of a bioprotective culture on yogurt spoilage (Credit: iStock.com/Fascinadora).

The models from this study are able to predict the amount of spoiled product when four common spoilage yeast strains are present in a production (*Debaryomyces hansenii*, *Yarrowia lipolytica*, *Saccharomyces cerevisiae*, and *Kluyveromyces*) at different storage temperatures, with or without a bioprotective culture containing *Lacticaseibacillus rhamnosus* over a 30-day storage period. Although the researchers found the effect of the bioprotective culture was most pronounced at 7 degrees Celsius for all yeasts compared to 16 degrees Celsius, the yeast strain had the largest effect of the efficacy of the bioprotective culture. The Monte Carlo models were validated with actual data from a European dairy.

Nielsen added, "If a dairy has a problem with a yeast strain known to have a similar growth-inhibition pattern in the presence of a bioprotective culture as one of the yeast strains tested in this study, the data from this strain can be used in the model to predict an expected spoilage level relevant for the specific dairy; therefore, the predictive model can be used as a tool that allows the industry to better evaluate the potential of improving control of fungal spoilage by using bioprotective cultures at specific production settings."

The study presents a valuable tool to assist in management decisions that can help to reduce economic losses due to food waste. Additionally, the methods used for model development can be used further for creating new and improved models.

Notes for editors

The article is "Development of predictive models evaluating the spoilage-delaying effect of a bioprotective culture on different yeast species in yogurt," by Line Nielsen, Maria Rolighed, Ariel Buehler, Susanne Knøchel, Martin Wiedmann, and Cecilie Marvig (<https://doi.org/10.3168/jds.2020-20076>). It appears in the *Journal of Dairy Science*, volume 104, issue 9 (September 2021), published by FASS Inc. and [Elsevier](#).

It is openly available at [https://www.journalofdairyscience.org/article/S0022-0302\(21\)00669-X/fulltext](https://www.journalofdairyscience.org/article/S0022-0302(21)00669-X/fulltext).

Full text of the article is also available to credentialed journalists upon request. Contact Eileen Leahy at +1 732 238 3628 or jdsmedia@elsevier.com to obtain copies. Journalists wishing to interview the authors should contact the corresponding author, Maria Rolighed, Chr. Hansen A/S, at dkmrol@chr-hansen.com.

About the *Journal of Dairy Science*

The *Journal of Dairy Science*® (JDS), an official journal of the American Dairy Science Association®, is co-published by Elsevier and FASS Inc. for the American Dairy Science Association. It is the leading general dairy research journal in the world. JDS readers represent education, industry, and government agencies in more than 70 countries, with interests in biochemistry, breeding, economics, engineering, environment, food science, genetics, microbiology, nutrition, pathology, physiology, processing, public health, quality assurance, and sanitation. JDS has a 2020 Journal Impact Factor of 4.034 and 5-year Journal Impact Factor of 4.354 according to Journal Citation Reports (Source: Clarivate 2021).

www.journalofdairyscience.org

About the American Dairy Science Association (ADSA)

The American Dairy Science Association (ADSA) is an international organization of educators, scientists, and industry representatives who are committed to advancing the dairy industry and keenly aware of the vital role the dairy sciences play in fulfilling the economic, nutritive, and health requirements of the world's population. It provides leadership in scientific and technical support to sustain and grow the global dairy industry through generation, dissemination, and exchange of information and services. Together, ADSA members have discovered new methods and technologies that have revolutionized the dairy industry.

www.adsa.org

About FASS Inc.

Since 1998, FASS has provided shared management services to not-for-profit scientific organizations. With combined membership rosters of more than 10,000 professionals in animal agriculture and other sciences, FASS offers clients services in accounting, membership management, convention and meeting planning, information technology, and scientific publication support. The FASS publications department provides journal management, peer-review support, copyediting, and composition for this journal; the staff includes five BELS-certified (www.bels.org) technical editors and experienced composition staff.

www.fass.org

About Elsevier

As a global leader in information and analytics, [Elsevier](#) helps researchers and healthcare professionals advance science and improve health outcomes for the benefit of society. We do this by facilitating insights and critical decision-making for customers across the global research and health ecosystems.

In everything we publish, we uphold the highest standards of quality and integrity. We bring that same rigor to our information analytics solutions for researchers, health professionals, institutions and funders.

Elsevier employs 8,100 people worldwide. We have supported the work of our research and health partners for more than 140 years. Growing from our roots in publishing, we offer knowledge and valuable analytics that help our users make breakthroughs and drive societal progress. Digital solutions such as [ScienceDirect](#), [Scopus](#), [SciVal](#), [ClinicalKey](#) and [Sherpath](#) support strategic [research management](#), [R&D performance](#), [clinical decision support](#), and [health education](#). Researchers and healthcare professionals rely on our 2,500+ digitized journals, including *The Lancet* and *Cell*; our 40,000 eBook titles; and our iconic reference works, such as *Gray's Anatomy*. With the [Elsevier Foundation](#) and our external [Inclusion & Diversity Advisory Board](#), we work in partnership with diverse stakeholders to advance [inclusion and diversity](#) in science, research and healthcare in developing countries and around the world.

Elsevier is part of [RELX](#), a global provider of information-based analytics and decision tools for professional and business customers. www.elsevier.com