

кукурудзяне борошно тонкого помелу від ТОВ «Каскад» для подальшої розробки безглютенових мафінів. Tally має кращі технічні характеристики і гарантує, що кількість глютену, підтверджена лабораторними тестами, не перевищує 20 частин на мільйон (20 мг/кг). Це головна вимога до якості сировини для пацієнтів з целиакією.

СПИСОК ЛІТЕРАТУРИ

1. Elke A., Dal Bello F. // Science of Gluten-Free Foods and Beverages. 2009. URL.: <https://www.elsevier.com/books/science-of-gluten-free-foods-and-beverages/arendt/978-1-891127-67-0>.
2. Perlmutter D., Loberg K. // New York, USA: Little, Brown i Company. 2013: 336.
3. Jeffrey L.C., Atwell W.A. // AACCC International, Inc. 2014: 88 p.
4. Горобець А.О. // Медицина транспорту України. 2015. 3-4: 45-50.
5. Медведєва А. // Міжнародний науково-практичний журнал «Товари і ринки». 2018. 4 (28): 115-123.
6. Чудік Ю.В., Сафонова О.М. // Вісник ХДТУСГ. 2003.16: 165-170.
7. Авершина О.Б. // Збірник наукових праць студентів «Науковий пошук молодих дослідників». Серія: Технічні науки. 2013. 2: 31-35.
8. Дробот В.І., Грищенко А.М. // Обладнання та технології харчових виробництв: тематичний збірник наукових праць Донецького нац. ун-ту економіки і торгівлі ім. М. Туган-Барановського. 2013. 30: 52-58.
9. Авершина О.Б. // Збірник наукових праць студентів «Науковий пошук молодих дослідників». Серія: Технічні науки. 2013. 2: 31-35.
10. Лобачова Н.Л. // Суми: Сумський нац. аграрний ун-т. 2015: 214 с.

INNOVATIVE APPROACHES IN THE PRODUCTION OF STARTER CULTURES FOR YOGURTS

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The production of high-quality yogurts heavily relies on the selection and cultivation of specific microorganisms, known as starter cultures. These cultures play a crucial role in determining the flavor, texture, and nutritional content of yogurts. In recent years, there has been a surge in innovative approaches in the production of starter cultures, driven by advancements in biotechnology and a growing demand for diverse and healthier yogurt options.

Traditionally, yogurt production involved using a combination of *Lactobacillus bulgaricus* and *Streptococcus thermophilus* strains. While effective, this limited the flavor profiles and health benefits of yogurts. The need for more diverse and functional cultures led to the exploration of novel methods and strains.

One of the groundbreaking approaches in starter culture production is the use of genetic modification and strain improvement techniques. Scientists are now able to enhance specific traits in bacteria, such as acid tolerance, probiotic properties, and flavor-producing capabilities. This allows for the creation of custom-tailored cultures that can impart unique characteristics to yogurts [1].

Consumers are increasingly aware of the health benefits associated with probiotics, which are live microorganisms conferring health benefits to the host. Innovations in starter culture production involve the incorporation of probiotic strains like *Bifidobacterium* and *Lactobacillus acidophilus* into yogurt cultures. This not only enhances the yogurt's digestive health benefits but also opens up new market segments for functional foods.

Advancements in fermentation technology have given rise to precision fermentation, where specific compounds are produced in controlled environments. In the context of yogurt production, this means precise control over the production of flavor compounds, texture-enhancing molecules, and bioactive peptides. Precision fermentation allows for the consistent and scalable production of high-quality yogurts.

Catering to the increasing demand for plant-based products, researchers are developing starter cultures suitable for plant-based yogurt alternatives. This involves selecting cultures that can thrive in non-dairy environments, such as those based on soy, almond, or coconut. Plant-based yogurt cultures contribute to the growing market of dairy-free and vegan-friendly products.

The emerging field of synthetic biology has made a significant impact on starter culture development. Synthetic biology techniques enable the design and construction of entirely new biological systems for yogurt production. This approach offers unparalleled control and precision in tailoring cultures for specific yogurt varieties.

While innovative approaches in starter culture production offer tremendous opportunities, there are challenges to address. Safety, regulatory compliance, and consumer acceptance are critical considerations. Striking a balance between innovation and adherence to industry standards is essential for the successful implementation of new technologies [2].

Innovations in the production of starter cultures for yogurts represent a dynamic field with the potential to revolutionize the yogurt industry. From genetic modification to precision fermentation and plant-based alternatives, these approaches offer exciting possibilities for creating healthier, tastier, and more diverse yogurt options.

REFERENCES

1. Arslaner A. // *Food Science and Technology*. 2020. 40(2): 582-591.
2. Uduwerella G., Chandrapala J., Vasiljevic T. // *International Journal of Dairy Technology*. 2018. 71(1): 71–80.

FERMENTATION PRODUCTION STEP AND ADDICTION MECHANISM FOR INCLUSION OF BREWING ADJUNCTS

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Such manufacturing step in the sequence as fermentation is a candidate for producing a functional beer due to its technological flexibility. On the one hand, this step's flexibility derives from the participation of a living organism with several active metabolic pathways. On the other hand, this same feature adds complexity to this production step. Although the biochemistry of the fermentation itself is well established, recent advances in the integration between genomics, transcriptomics, and metabolomics of beer yeasts have unraveled in detail its main metabolic routes [1]. Moreover, genetic engineering allows the manipulation of genetic material to improve the