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MARKET OF FERMENTED BEVERAGES IN POLAND

RYNEK NAPOJÓW FERMENTOWANYCH W POLSCE

Summary: The contemporary market of fermented beverages is experiencing dynamic growth. In this article three groups of fermented beverages: cider, kombucha, and plant-based dairy alternatives, will be examined. Cider, known for its use of native apples, is becoming increasingly popular, with producers combining innovation and tradition in their products. Kombucha, a refreshing tea-based drink, is gaining the market with its potential health benefits. The trend of reducing the consumption of animal products opens new perspectives for plant-based food and dairy alternatives, including kefir. The article presents current market producers, challenges, and innovations introduced in the production of the aforementioned fermented beverages.

Keywords: fermented beverages, cider, kombucha, plant-based dairy

Streszczenie: Współczesny rynek napojów fermentowanych przeżywa dynamiczny rozwój. W artykule zbadane zostaną trzy grupy napojów fermentowanych: cydr, kombucha oraz roślinne zamienniki produktów mlecznych. Cydr, znany z wykorzystania rodzimych jabłek, cieszy się coraz większą popularnością, a producenci łączą w swoich produktach innowację i tradycję. Kombucha, orzeźwiający napój na bazie herbaty, zdobywa rynek dzięki swoim potencjalnym korzyściom zdrowotnym. Trend ograniczania spożycia produktów pochodzenia zwierzęcego otwiera nowe perspektywy dla roślinnych zamienników żywności i nabiału, w tym kefiru. W artykule przedstawiono aktualnych producentów rynkowych, wyzwania i innowacje wprowadzone w produkcji wyżej wymienionych napojów fermentowanych.

Słowa kluczowe: napoje fermentowane, cydr, kombucha, nabiał roślinny

Introduction

According to the lexical term, fermentation is an enzymatic process of transformation of chemical compounds present in the foods with the participation of microorganisms. For many centuries, it was solely used for food preservation. Currently, it is mainly used to impart interesting sensory characteristics, enrich food products with alcohol, or health-promoting properties to. In Poland the fermentation process is tied to a multi-generational tradition, and as a result, it is associated with diverse regional products. Nevertheless, openness to new flavors and discoveries shapes the domestic market, leading Poles to include a wide variety of fermented foods and beverages in their daily diets. This article will present a few types of fermented beverages well-known to Poles, as well as those that are gaining popularity.

Cider

Cider is a fermented alcoholic beverage with an alcohol content of up to 8.5%. It is produced using various apple varieties and yeast. Due to legal regulations, Polish ciders must contain at least 60% apple juice, which distinguishes them with a higher fruit content from ciders produced in most other European countries. Poland, being a global leader in apple production, often uti-

lizes apples in processing. The lack of dedicated apple varieties for cider production and the ability to use more than 2 apple species provide flexibility in formulation for this alcoholic beverage [1]. Selecting the right apple varieties and microorganisms for fermentation are crucial aspects of cider production.

Cider is experiencing a two-fold faster pace of sales value growth compared to alcoholic beverages as a whole, comparing 2021 to 2022. This product still represents a niche in the market, accounting for 0.12% of the domestic alcoholic beverage market. However, as the overall sales value of alcoholic beverages declines, an increase in cider sales value is observed [2]. This trend has been noted by some breweries that have started introducing apple-based beers. Experts from The Association of Employers The Polish Wine Council remind consumers to read product labels to choose original ciders, thereby supporting the development of cider producers. The Polish government promises to abolish excise taxes on ciders to support national products. The resolution went to the parliament, but due to a change in its composition in September 2023, the bill was not considered.

Over the years, the cider market has undergone significant development. Polish cider makers have mastered the production of this beverage on a large scale, supplying both domestic and foreign markets. The most recognizable brand in Poland is Cydr Lubelski, produced by the company AMBRA S.A. This brand



Fig. 1. CyderInn available in three variants: dry, semi-dry, and apple with rose. <https://cydrownia.net.pl/ciderinn/>

holds approximately 50% of the cider market share [3]. Their consistent product offering includes three varieties of apple cider and one pear cider called perry. Another Polish producer increasingly appearing on store shelves is CYDROWNIA S.A. Their portfolio includes cider brands: CyderInn, Dzik, and Dzik 0%. CyderInn adopts a classical approach to cider production, using 100% apple juice. It is available in three variants: dry, semi-dry, and apple with rose. The brand Dzik is obtained from Polish wild apples and pears. Dzik 0% represents an innovative approach to the market by introducing non-alcoholic cider. Additionally, they offer sensory-interesting products, enriching the classic apple cider flavor with options such as maracuja or lemon grass. Through the sale of Dzik and Dzik 0% bottles, they support the Łąka Foundation. Collaborative initiatives with various foundations are increasingly adopted by producers, successfully encouraging consumers to purchase their products.

Craft cideries are also gaining popularity and recognition in global competitions. The production of high-quality cider is attracting an increasing number of enthusiasts. The "Polish Craft Ciders Association" actively engages in efforts to integrate the craft cider community and takes actions to regulate legal regulations that will promote the development of cider production. Polish craft ciders have been awarded prizes in international competitions. Chyliczki Cider is a family-owned craft cidery. They offer a variety of apple-based beverages, categorizing them into two types: sparkling and ice ciders. The same production methods used for sparkling wines are employed, and each bottle matures for a minimum of 8 months. Radosny Cider is a young craft cidery located near Wrocław. The foundation of Radosny's production relies on the use of only old apple varieties and wild yeasts. Cider makers enthusiastically experiment with production technologies, employing various vinification methods. Each of their products is characterized by a low-intervention production ap-

proach, meaning minimal interference in the natural fermentation and maturation process. The result is the production of high-quality natural ciders.

Cider, as a beverage, is an example of a product with a rich and enduring heritage and traditions. However, in response to changing consumer preferences and emerging trends, cider has seen a significant increase in popularity. The production of this beverage is natural and supports the Polish industry. Furthermore, its natural version serves as a source of fiber and polyphenols. Additionally, due to the success of craft ciders in international competitions, these beverages will gain prestige and exert pressure for the release of high-quality products into the

market. The use of different apple varieties, fermentation methods, or flavor additives can expand the market, creating products that cater to every consumer group. Additional growing marketing support contributes to increased awareness of the product and higher interest from potential consumers.

Kombucha

Kombucha is a fermented beverage obtained by fermentation of sweetened tea (*Camellia sinensis* L.) with microorganisms such as acetic acid bacteria, lactic acid bacteria, and yeast that collectively form the Symbiotic Culture of Bacteria and Yeast (SCOBY). Fermentation can transform nutritional components of tea into acetic acid, lactic acid, and ethanol [4]. Beverages available on the market are classified as non-alcoholic but, depending on the specifics of production, there may be trace amounts of ethanol in the beverage, ranging from 0.02% (v/v) to 0.5% (v/v). Various types of tea are used for kombucha production. Black and green teas are most popular due to their universal flavor. Kombucha made from herbal teas is also available, but it is manufactured less frequently due to slower microorganism growth and lower enzymatic activity [5]. Potential health-promoting properties, including antioxidant and anti-diabetic properties, cholesterol reduction, immune system support and liver detoxification, are the qualities that have decided about its widespread popularity [6].

The global kombucha market, valued at 2.56 billion USD in 2021, is steadily expanding. Projections for 2025 anticipate growth to the range of 3–5 billion USD, with a forecasted surge to 11.4 billion USD after another five years. Increasing consumer awareness and changes in regulatory laws may further boost interest in kombucha, that is the real belief that creates the next moves of developing new food products [7].

The chemical composition of kombucha varies based on tea type, their concentration and fermentation time, among others. Challenges for producers include achieving repeatability of chemical parameters and sensory properties since any variations in fermentation conditions alter the microbial consortium. Therefore, the National Centre of Research and Development awarded a grant to a consortium of Fabryka Lemoniade, FL Group Ltd and Lodz University of Technology to run the innovative technological project "Development and implementation of innovative kombucha production technology" (POIR.01.01.01-

429 00-0910/20-00), which, among others, aims to stabilize taste and aroma attributes and extend kombucha shelf life. The project incorporates cold extraction of tea leaves to achieve a high concentration of bioactive compounds and employs newly screened strains of microorganisms [8].

The kombucha market in Poland is booming, with several manufacturers offering a variety of fermented teas with many additives. Leading companies include M Wolska sp. j. – Meduzyna, offering unpasteurized kombucha from organic farming, VIGO kombucha with live bacterial cultures and added ginger, cucumber, and coriander, and Majestea, providing a wide range of flavored kombucha. New companies on the market start to introduce innovative flavor combinations. Pasieki Rodziny Sadowskich offers kombucha with rose, mint, honey or pomegranate. A sparkling kombucha flavored with wild strawberry, which is an alternative to sparkling wines, is their new product. The Kisi Kisi brand is another Polish kombucha innovator. It uses uncommon raw materials for its kombucha, such as the herb of fireweed or hemp. The increased interest in this product in Poland has been noticed by foreign companies. As a result, products from Capitan Kombucha or Komvida can be already found in Polish stores.



Fig. 2. Sparkling kombucha flavored with wild strawberry as alternative to sparkling wines. [<https://pasiekisadowskich.pl/kombucha-musujaca#galleryName=productGallery,imageNumber=3>]

Recognition of kombucha by consumers, the diversification of flavor variants and rapidly growing competition are the trends observed in the Polish market. Manufacturers are also noticing the possibility of producing non-alcoholic alternatives to alcoholic beverages just like the aforementioned strawberry kombucha as a non-alcoholic substitute for sparkling wines. The production of this beverage on an industrial scale is a challenge that is being worked on not only in the centers of companies, but also in

scientific units. It is therefore a matter of time before kombucha meets the permanent offer of most grocery stores.

Plant-based dairy alternatives

Plant-based alternatives to animal products, including dairy, are gaining popularity due to sensory acceptability and positive health impacts. Reducing cholesterol levels is one of the reasons to decrease the consumption of animal products, among other factors. Although Kefir has origins in the Caucasus, it is a Polish fermented dairy national treasure. This product has a long-standing tradition, and its market in Poland is currently experiencing a resurgence. Kefir is the most popular potential source of probiotics, with a mild and refreshing taste. Originally, it was made from cow's milk subjected to fermentation using a consortium of microorganisms known as kefir grains [9].

Polish people are well acquainted with plant-based alternatives, with 82% having heard of them, and over 30% consuming them occasionally. Plant-based kefir is the third most popular choice among Polish consumers [10]. The global market for dairy product substitutes is expected to increase from USD 21.4 billion in 2020 to USD 36.7 billion in 2025 [11]. In Poland, where kefir has a strong tradition, its availability is on the rise, while in Western Europe, it is gaining popularity as an innovation. It is estimated that the global kefir market will grow by 60.4% from 2021 to 2028 [12].

Qualitative research on plant-based kefir is ongoing, with producers and scientists working on it. The product's concept is based on the idea that its texture and flavor should imitate that of dairy milk. Production challenges are focused on stability and the fermentation process. Sensory and manufacturing factors depend mainly on the raw materials used as a base. The most popular ones are the same as those used for milk alternatives: soy, nuts, or oat flakes are the basis, but there are also new options based on coconut milk or chickpeas [13]. The ProBioVege



Fig. 3. Oil press cakes and prototypes of non-dairy milk alternatives [<https://www.facebook.com/photo.php?fbid=312584037564046&set=pb.100064373551199.-2207520000&type=3>]

project, aimed at producing innovative plant-based dairy alternatives, including kefir is being developed as part of a project funded by the National Centre for Research and Development under the Leader XI programme. Scientists use oil press cakes, which are the remains of pressing oilseeds such as flax, amaranth, or black cumin, to produce the base for plant-based alternatives. These products have a pure composition, are rich in bioactive ingredients, fiber, and contain beneficial microflora [14]. The sustainable development approach in the production of vegan products is an additional important factor influencing the attractiveness of these products.

Roślinny SuperFood and Mleczni Bracia are examples of Polish artisanal producers of plant-based dairy products. Both companies offer coconut milk-based kefir alternatives [15]. These products are available in specialty vegan food stores or can be ordered online. Polish store shelves primarily feature products from foreign companies. The Spanish company NaturGreen offers kefir in its product range. They use almond, coconut, or cashew as the base for their products. Additionally, they offer kefirs enriched with fruits.

Kefir has gained recognition due to its sensory and health properties, becoming an integral part of the Polish diet. Hence, the need for the development of this product category to increase its accessibility to a wider range of consumers. An important aspect of the future development of vegan kefir is minimizing the price gap between animal-based products and their plant-based counterparts. Therefore, the search for alternative products for use as base for fermentation is currently a hot topic among scientists and manufacturers.

Conclusions

Despite the already diverse market for fermented beverages in Poland consumers expect its further growth and novelties on store shelves. The combination of innovation with tradition has created a second life for cider and kefir. Meanwhile, the desire to explore Eastern cuisine has brought kombucha to the market. Each of the products discussed has great potential for development but requires a connection between industry and academia to better understand and optimize production processes.

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