THE POTENTIAL OF A NEW FOOD AND BEVERAGE PAIRING TREND: ASSESSING THE PAIRING OF DIFFERENT TYPES OF BEER AND FOOD FOR THE YOUNG GENERATION

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Abstract

This research was carried out at the Faculty of Hotel Management and Tourism in Vrnjačka Banja, Serbia, in which 56 respondents, the younger generation, who evaluated the combination of characteristic types of beer and biscuits, participated. Three beers were produced in the geographical area of the Republic of Serbia and were used: non-alcoholic beer, light beer, dark beer, while one type of beer was produced abroad: light beer. Also, four types of biscuits were used for the analysis: with a neutral taste, salty, sweet and spicy biscuits, all produced in Serbia. During the analysis, the participants had all the necessary conditions for the analysis (equipment, inventory, space, light, room temperature, etc.) and, with the help of a pre-prepared scale, evaluated the arrangement of beer and biscuits. The aim of the research was to assess the extent to which beer and biscuits go together and whether the combination of food and drink has a certain significance among younger generations.

Key Words: food, drink, beer, gastronomy, pairing
JEL classification: L66, L69

Introduction

Beer stands as one of humanity's earliest and most widely enjoyed alcoholic beverages, ranking as the third most favored drink globally.
surpassed only by water and tea. Its production involves the fermentation of grains, primarily barley malt, although wheat, corn, and rice are also utilized. This fermentation process, catalyzed by the digestion of starch sugars, yields ethanol and carbonation, resulting in the formation of beer. Generally perceived as a relatively mild alcoholic beverage, its alcohol content ranges between 3% and 13%. Historically, beer finds its roots in ancient Egypt, and its popularity remains prevalent worldwide today. Hops serve as the predominant source of flavor in most beer varieties, imparting bitterness and serving as a natural preservative. Occasionally, brewers incorporate additional flavorings such as herbs or fruits. While natural carbonation occurs during fermentation, this carbon dioxide is typically extracted during processing and replaced with forced carbonation techniques. (Do et al., 2009; Donadini et al., 2013; Klapan, 2023; Veljović et al., 2010; Borgogno et al., 2015; Covarrubias Arellano et al., 2022).

Among humanity's earliest documented writings are those pertaining to the creation and dissemination of beer. The Code of Hammurabi, for instance, includes regulations concerning beer production and establishments, while the „Hymn to Ninkasi“ serves as both a devotional offering to the Mesopotamian goddess of beer and a mnemonic device for remembering beer-making techniques in cultures with limited literacy (Do et al., 2009; Klapan, 2023). The oldest evidence of fermented grain-based beverages originates from chemical analysis of pottery fragments discovered in China, dating back to approximately 7000 BC, indicating the production of fermented beverages derived from rice, honey, and fruit (Eschevins et al., 2018; Gajić et al., 2021). In Europe, traces of beer production can be traced back 5000 years (Gajić et al., 2021). Over the millennia, beer-making methods have evolved alongside the progression of human civilization. The advent of the industrial and scientific revolutions in the late 19th century propelled brewing techniques forward, while globalization in the 20th century further contributed to the widespread popularity of this beverage (Paulsen et al., 2015; Spence, 2022).

Extensive research has been conducted on food pairing to comprehend the underlying patterns dictating how individuals combine diverse foods and ingredients. The objective is to derive successful pairings and offer sound recommendations to consumers. This area of study spans various disciplines, including gastronomy and sensory analysis, aiming to innovate and understand the rationale behind specific food and beverage combinations (Paulsen et al., 2015; Kim et al., 2015; Spence, 2022). According to Paulsen
et al. (2015), effective pairing suggestions can significantly impact the success of food and beverage sales. Similarly, Scander et al. (2018) emphasized the necessity of grasping the mechanisms guiding beverage choices across different cultural contexts and environments.

In this scenario, it is evident that beer promoters or culinary experts should align with this burgeoning trend by offering clientele top-notch guidance on beer and food pairings. A fundamental aspect of such professional recommendations involves grasping the essential principles and underlying mechanisms of pairing (Paulsen et al., 2015; Kim et al., 2015; Spence, 2022). This understanding enhances professional confidence in their recommendations and enhances customers' perception of the service's professionalism. Together, these factors enhance the overall consumer experience, leading to improved profitability and increased repeat business (Renner et al., 2012; Kim et al., 2015).

**Literature review**

**Beer and gastronomy**

Numerous professionals in the culinary industry, including gastronomes, chefs, sommeliers, waitstaff, and restaurant owners, stress the significance of pairing food and beverages to enhance business prospects. Historically, many traditional pairings have naturally emerged from cultural and geographic congruences, likely ingrained as common knowledge among consumers (Paulsen et al., 2015; Kim et al., 2015; Spence, 2022). Gastronomy, whether approached as a skill, an art form, or a business venture, embodies a profound interplay of scent, flavor, visual aesthetics, and guest satisfaction. The production of high-quality gastronomic products necessitates a foundation of superior-grade ingredients and foodstuffs, which, through processing, refinement, and sometimes mere presentation, transform into distinct gastronomic entities with unique attributes and appellations (Wada et al., 2012; Zajonc, 1968). Terminology employed by experts concerning matching principles often lacks standardization, with different professionals using varying terminology to describe the same principles. Distinguishing between shared knowledge and personal opinions can pose challenges, while external factors such as context and social environment also play integral roles in shaping the overall gastronomic experience, including food and beverage pairings (Eschevins et al., 2019; Sester et al., 2013).

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Pairing food and beverages involves consuming two items together to enhance the sensory experience beyond what each offers individually. A successful pairing often results from shared chemical components between the food and/or drink (Rune et al., 2021; Sester et al., 2013). Food quality significantly influences guest satisfaction, with the physical environment and product quality also playing pivotal roles (Rune et al., 2021). It's imperative for restaurant management to prioritize food quality, encompassing taste, nutritional value, variety, freshness, presentation, and appropriate serving temperature, all of which contribute to improved satisfaction (Klapan, 2023). Sensory characteristics such as color, taste, aroma, texture, and temperature are key factors related to quality in both food and beverages, as noted by Nygren et al. (2003) and Klapan (2023). Beer holds a notable place in catering, offering versatility in pairing with various dishes and enriching the gastronomic experience (Klapan, 2023). Beer tourism has emerged as an integral component of gastronomic tourism, presenting an opportunity for countries to promote sustainable tourism through their beer culture. Many regions renowned for beer production leverage this beverage to boost tourism, organizing events where visitors can enjoy beer while learning fascinating facts about it (Gajić et al., 2021).

The taste of beer is the result of a combination of different elements, and some of the most important factors that affect the taste of beer include the following (Klapan, 2023):

- Hops (Humulus lupulus): Hops are added to beer as a spice and to add bitterness and aroma. Different hop varieties can contribute different aromas and flavors, including floral, citrus, spice and herbal notes.
- Malt: Malt is obtained by treating grains with enzymes and heat. This process allows the creation of sugars that chemically ferment brewer's yeasts more efficiently. Malt flavors can be sweet, caramel, roasted, or roasted, which adds complexity to the beer's flavor.
- Water: The quality of the water used in brewing can also significantly affect the taste. Different minerals in the water can add different notes and textures to the taste of the beer.
- Yeast: Brewer's yeast is responsible for fermenting sugars into alcohol and carbon dioxide. Different types of yeast can bring different aromas and flavors to beer.
- Alcohol: The amount of alcohol in beer also affects the taste. Beers with higher alcohol content often have a warmer and stronger taste.
- Fermentation: The type and time of fermentation can also affect the taste of the beer. Fermentation can be low (lagering) or high (aleling), which contributes to the different characteristics of the beer.

These components often contribute to the complexity and different layers of the beer's flavor. The taste of beer is, of course, subjective at the same time and depends on the personal knowledge, attitudes and preferences of the consumers. Matching food and drink is rooted in cultural practices. Experts recommend balancing the flavor intensity of food and drink so that neither food nor drink dominates, especially when it comes to beer (King & Cliff, 2005).

Research on food and beverage pairing often adopts two primary approaches. The first approach suggests that two products are well-matched when one preserves or enhances the qualities of the other. Alternatively, the second approach posits that the flavors of two products harmonize within a unified perception, encompassing the notion of flavor balance. Studies employing this approach typically involve participants making judgments about the combined perception of two products (Eschevins et al., 2018; Gajić et al., 2021; Vukolić et al., 2023). Generally, cookbooks or blogs offer suggestions for pairing dishes with beverages, or vice versa, without delving into the rationale behind these matches (Eschevins et al., 2019).

In exploring food pairing, it's noted that ingredients sharing chemical compounds are more likely to complement each other in taste and aroma (Scander et al., 2018; Vukolić et al., 2021). Besides the influence of culture on food pairing, Shepherd & Raats (2006) highlight that taste perception engages multiple sensory and motor systems. Various aspects of the eating experience stem from the submodalities of the somatosensory system, including fine touch, creaminess, crunchiness, and temperature. Thus, an additional layer of olfactory or aromatic alignment should be considered when pairing multiple food products (Covarrubias et al., 2022). The recent decades have witnessed a surge in research interest in flavor pairing, with examples ranging from beer with food to tea with cheese and chocolate (Spence et al., 2022). Researchers have also turned their attention to determining the optimal combination of food and beer (Donadini et al., 2013).

Beer, among the oldest alcoholic beverages, has carved out a niche in gastronomy owing to its diverse array of tastes, aromas, and textures.
Paulsen et al. (2015) observed a significant impact of taste and preference for beer type, noting that an overemphasis on any component could diminish liking and perceived harmony. While wine and food pairing is a well-established concept, the correlation between beer and food remains less defined, often contingent on the occasion (Petković, 2022).

Moreover, the significance of achieving a sweet-sour balance between products is frequently underscored. Although most pairing theories have been developed primarily with wine in mind, they should theoretically extend to beer due to the shared sensory dimensions of the products. Terms like „harmony“ and „complexity“ commonly feature in culinary literature to depict the overall perception of a food pairing, encapsulating how well flavors and aromas complement each other and the sensory diversity within the pairing (Paulsen et al., 2015). Harmony and complexity are also linked to the broader concept of „unity in diversity,“ suggesting that individuals prefer objects with high diversity or complexity while maintaining a sense of unity or harmony (Higgs & Ruddock, 2020; Giacalone et al., 2015).

Similar to wine, the selection of beer hinges on the type of food served. With a myriad of beer styles available, ranging from light and crisp lagers to dark and robust brews, beer benefits greatly from the incorporation of various flavors and aromas such as fruit, herbs, or chocolate. Pairing food with beer can create intriguing contrasts or seamlessly complement the flavors of the dish (Higgs & Ruddock, 2020; Giacalone et al., 2015; Kroeze & Bartoshuk, 1985).

Lagers and lighter beers are usually paired with lighter dishes such as salads, fish and chicken, while darker beers are often paired with meat, dishes with cheese sauces or chocolate. Beer can also serve as a refreshing drink to enjoy on different occasions such as picnics, barbecues or evening gatherings with friends (Higgs & Ruddock, 2020; Giacalone et al., 2015; Gajić et al., 2021). In short, beer plays an important role in the gastronomic offer as a drink that can be paired with different dishes, creating interesting contrasts or complementing the flavors of food and providing a unique gastronomic experience (Klapan et al., 2023).

**Gastronomic recommendations for pairing food and beer**

Culinary literature, such as books and websites, serves as the primary source of information aiding gastronomy professionals in discerning
effective food and beer pairing guidelines. Typically, these resources offer examples of pairings, suggesting specific combinations or associations with product categories. For instance, fruity beers are often recommended to accompany desserts, white meats, seafood, and cheeses, while they are discouraged as companions to spicy dishes, pizza, pasta, and certain cheeses (Higgs & Ruddock, 2020; Giacalone et al., 2015; Gajić et al., 2021).

Expanding beyond specific pairings, some experts aim to provide comprehensive guidelines for creating harmonious matches across the entire realm of food and beverage pairing. These guidelines primarily consider the sensory attributes of products, encompassing their quality and intensity (Higgs & Ruddock, 2020; Giacalone et al., 2015). Pairing food and drink can be approached through similarity, aiming to find products with similar sensory characteristics (aroma, taste, texture), or through contrast, pairing items with differing sensory profiles. Maintaining balance in intensity is crucial, ensuring neither the food nor the drink dominates the palate. Additionally, beverages can serve as palate cleansers between dishes (Higgs & Ruddock, 2020; Giacalone et al., 2015; Gajić et al., 2021; Laguna et al., 2017; Nygren et al., 2003).

Figure 1: Styles pairings

Source: https://www.reddit.com/

Balance primarily pertains to the overall intensity level in food and beverage pairing, although some scholars also delve into the balance concerning texture perception. The concept of body-to-body relationship refers to the relative harmony between the food and the wine concerning sensations of weight, lightness-to-richness, and smoothness-to-roughness (Higgs & Ruddock, 2020; Giacalone et al., 2015; Gajić et al., 2021; Laguna et al., 2017; Nygren et al., 2003), or the interplay between
fattiness and tannin levels in the wine and food pairing. Harrington and Hammond (2006) concentrated their study on achieving balance between the body of the wine and food. They discovered that in wine and food pairing, the degree of harmony was significantly associated with the equilibrium between the body of the wine and the food, neither overpowering the other. When the fattiness of the food and the tannin level of the wine are similarly intense when tasted individually, the two products complement each other (Wada et al., 2012; Sester et al., 2013).

Methods

In the research participated 54 people aged 19 to 23. Out of a total of 54 people, 29 are male while 25 are female. All respondents are adults, students of the Faculty of Hotel Management and Tourism majoring in Gastronomy Management in Vrnjačka Banja, and they all gave their consent to participate in this research. Respondents have certain prior knowledge in the field of food and beverages. The room in which the research was carried out was well lit with natural light, ventilated and free of foreign smells, with comfortable furniture, and each subject received his own pre-prepared material. Each respondent received a checklist with instructions. Respondents were given a certain amount of time to familiarize themselves with the list and ask questions if they had doubts. After that, instructions were once again given for properly tasting the food and recording the results and impressions.

After that, each subject was given four samples of beer: light alcoholic, dark alcoholic, light non-alcoholic and lemon-flavored beer. In addition, the respondents were given samples of typical Serbian traditional gastronomic products (four types of biscuits, salty, sweet, neutral and chocolate-flavored). Anonymity of the participants is ensured.

Results and discussion

Table 1 shows the average score of respondents for each type of beer.

Table 1: Average score of respondents for each type of beer (from 0 to 5)

<table>
<thead>
<tr>
<th>Category</th>
<th>Pairing principle</th>
<th>Light alcoholic beer</th>
<th>Dark alcoholic beer</th>
<th>Light non-alcoholic beer</th>
<th>Beer with taste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceptual</td>
<td>Balance of intensity</td>
<td>4.32</td>
<td>3.21</td>
<td>4.02</td>
<td>2.90</td>
</tr>
</tbody>
</table>
The principle of intensity balance is often highlighted by experts to elucidate why certain pairings fail, yet it is seldom emphasized when proposing successful matches. It's been asserted that when the characteristics of one product overpower those of the other, it indicates a mismatch. This underscores the dual objectives of food and drink pairing. On one hand, it can aim to create a distinctive consumer experience where both the food and drink are perceived holistically, with their respective attributes blending harmoniously. On the other hand, pairing can be geared towards promoting one dominant product, whose characteristics take precedence while the accompanying product assumes a supporting role in the background.

Table 2: Average score of respondents for pairing beer and food (from 0 to 5)

<table>
<thead>
<tr>
<th>Category</th>
<th>Light alcoholic beer</th>
<th>Dark alcoholic beer</th>
<th>Light non-alcoholic beer</th>
<th>Beer with taste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceptual</td>
<td>4.35</td>
<td>3.60</td>
<td>3.65</td>
<td>3.02</td>
</tr>
<tr>
<td>Conceptual</td>
<td>3.95</td>
<td>3.55</td>
<td>3.70</td>
<td>4.05</td>
</tr>
<tr>
<td>Affective</td>
<td>4.05</td>
<td>4.55</td>
<td>4.10</td>
<td>3.91</td>
</tr>
</tbody>
</table>

Source: Authors’ research

In this research, the sweetness, sourness, and bitterness levels are carefully balanced, resulting in a harmonious flavor profile. This equilibrium of attributes is also referred to as „contrast“ in expert literature. Both the principles of intensity balance and quality balance consider the pair as a unified entity, aiming for a holistic perceptual experience where the characteristics of both products blend seamlessly. Experts assert that a successful pairing should exhibit a high level of
harmony, defined as the degree to which sensations complement each other, which strongly correlates with the overall liking of the match (Eschevins et al., 2018; Paulsen et al., 2015). Therefore, achieving harmony appears to be the primary objective when pairing food and beverages. Occasionally, respondents base their pairings on autobiographical memories, relying on past experiences of harmony without analyzing the match in terms of pairing principles. However, this method of suggesting pairings is relatively uncommon. Typically, respondents refer to one or several principles to justify their choices. Similarity involves pairing two products that share common attributes, particularly aroma and taste, although considerations such as texture and color are also taken into account. In terms of aromatic similarity, it is believed that the resemblance between two products increases with the number of shared aromatic notes.

**Conclusion**

The principles of food and beverage pairing, as discerned from expert discussions, assert that it is guided by perceptual, conceptual, and affective elements. Perceptual principles, which pertain to sensory attributes of products (such as similarity, intensity balance, and sensory enhancement), were consistently cited to justify pairings. This underscores the significant influence of product sensory properties on pairing decisions. However, while sensory aspects are crucial, the research also emphasizes the importance of other dimensions. Conceptual principles encompass extrinsic traits like geographical origin, quality, consumption context (such as mealtime or seasonal considerations), and norms. Affective principles involve individual preferences and emotions. These findings partly support the notion that social context and conceptual characteristics play roles in food and beverage pairing alongside sensory factors. It is recommended that experts in this field expand this research because the results of this research proved the importance of pairing beer with food. Also, practitioners are recommended to use this knowledge to improve the business of their catering establishments.

**References**


