



WayScience

7th International Scientific
and Practical Internet Conference

«Integration of Education, Science and Business
in Modern Environment: Summer Debates»

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- biological sciences;
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FOODPAIRING ACROSS CULTURES: A COMPARATIVE STUDY FOR UKRAINIAN HORECA EDUCATION

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In today's context of globalization, intercultural mobility, and sustainable development, there is growing interest in a deeper understanding of food culture as an important component of identity, communication, and gastronomic experience. Pairing, as an approach to harmonizing the flavors of different foods and beverages, is gaining significant importance in professional gastronomy, restaurant service, and food design. At the same time, this area remains underexplored in the educational process, especially in the context of its integration into disciplines related to the culture and ethics of eating.

The lack of systematized knowledge about pairing as an interdisciplinary tool for sensory, cultural, and ethical analysis of food complicates the preparation of HoReCa professionals for the challenges of modern gastronomic trends. The relevance of this issue is further reinforced by the growing demand for culturally sensitive and ethically motivated approaches to menu creation, food service organization, gastronomic tourism, and the promotion of local flavors in an international context.

Despite the spread of pairing practices in global gastronomy, Ukraine lacks a comprehensive scientific and methodological basis for teaching them in higher education, particularly in disciplines related to food culture and ethics. The insufficient level of cross-cultural comparison of pairing approaches in different countries limits the development of critical thinking, sensory literacy, and ethical reflection among future hospitality industry professionals.

The aim of the study is to provide a theoretical rationale for pairing as a tool for developing food culture and ethics in higher education, as well as to conduct a comparative analysis of pairing approaches in different countries of the world in order to integrate best practices into academic programs for HoReCa specialties.

In contemporary gastronomy, the concept of foodpairing – a systematic method of combining ingredients based on their aromatic profile – is becoming increasingly relevant. This approach is based on the hypothesis that ingredients sharing common key volatile compounds can create harmonious flavor combinations, regardless of their culinary origin or traditional compatibility [1; 2].

The history of foodpairing is closely associated with the work of British chef Heston Blumenthal, owner of *The Fat Duck* restaurant, and food technologist François Benzi [3, 4]. Beginning in 1992, they initiated research into flavor compatibility, drawing on analytical chemistry, molecular gastronomy, and the physiology of taste [3]. One of the first experiments involved pairing white chocolate and caviar, united by the common aromatic molecule trimethylamine. Such studies laid the foundation for basic algorithms of flavor compatibility,

enabling the discovery of new, unconventional combinations: salmon with licorice, tomatoes with vanilla, blueberries with radish, strawberries with chicken [1; 4]. Their collaboration provided the basis for the scientific and technical analysis of aromatic molecules in food products, driving the transformation of gastronomy into an interdisciplinary science.

The scientific rationale for foodpairing relies on methods of chemical analysis of aromatic molecules (gas chromatography with mass spectrometry) and their classification by shared profiles. The main idea is that the more aromatic components ingredients share, the higher the probability of their harmonious combination [1; 5].

A key tool of innovative food design in culinary education is the *Foodpairing NV* database, which consolidates the results of molecular analysis of thousands of ingredients and visualizes their compatibility in the form of a flavor tree. In this system, ingredients with shorter “flavor distances” have a higher potential for harmonious interaction [1]. In training students in hotel and restaurant specialties, this database can be used as an interactive platform to study the chemical nature of flavor combinations, identify the potential of classical and innovative pairings, and model original gastronomic concepts. Students can explore not only already tested molecular cuisine solutions, but also perform tasks such as building their own pairing models for specific regional ingredients, adapting foreign flavor pairings to Ukrainian culinary traditions, or finding local product-based alternatives. This approach fosters critical thinking, sensory literacy, innovative culinary methods, and the development of professional gastronomic intuition.

To illustrate the diversity of interpretations of foodpairing in different cultural and gastronomic contexts, a generalized comparative table (Table 1) systematizes the key characteristics of pairing approaches in leading countries worldwide.

Table 1. Comparative table of pairing approaches in different countries

Country	Main approaches to pairing	Typical ingredients	Philosophy / Tradition	Role of science & technology
UK	Molecular pairing based on aroma chemistry	Caviar, white chocolate, salmon, licorice	Sensory experiments, conceptual cuisine	Use of GC-MS, Foodpairing NV database
France	Classical pairing: balance of flavor, texture, and temperature	Cheese, wine, truffles, creamy sauces	Harmony, terroir, gastronomic aesthetics	Moderate science integration, intuition
Italy	Traditional pairing + modern fruity accents	Mozzarella, tomatoes, prosciutto, basil, mango	Natural compatibility, simplicity	Locality, minimal techno-analysis
Japan	Umami pairing, deep taste understanding	Soy sauce, miso, seafood, green tea	Seasonality, minimalism, ritual	Umami biochemistry, precision
USA	Experimental pairing, fusion, algorithms	Bacon, strawberry, chocolate, maple syrup	Challenging tradition, gastronomic freedom	AI, sensory science, big data
India	Ayurvedic pairing: ingredient energetics	Spices, yogurt, ginger, mango, curry	Dosha balance, therapeutic cuisine	Limited formalization, ethnomedicine
Ukraine	Empirical pairing with local specificity	Borscht, lard, greens, fruits	Tradition, seasonality, rituality	Potential for scientific pairing development

Source: Authors' compilation based on references [1-8]

The UK is a pioneer in scientific foodpairing, with Heston Blumenthal's work contributing to the development of the modern molecular approach.

France and Italy demonstrate a traditionally sensory approach, where culinary intuition plays a key role.

Japan exemplifies the integration of traditional culinary philosophy with scientific taste understanding, especially regarding umami.

The USA is an experimental platform where pairing takes on creative and digital forms (AI, big data).

India uses pairing as part of ethnoculinary and medical knowledge (Ayurveda).

Ukraine is currently transitioning from empirical pairing to a scientifically based approach, opening prospects for interdisciplinary innovation.

Foodpairing has already proven its effectiveness in innovative gastronomy, but it also shows great potential in:

- developing new food products and beverages;
- adapting menus to local gastronomic traditions;
- creating functional foods;
- gastronomic education and professional training in the HoReCa sector.

Foodpairing is a modern methodology that combines achievements in food chemistry, sensory science, and culinary art to create unique flavor compositions. Thanks to analytical platforms such as Foodpairing NV, this practice attains the status of a scientifically grounded approach. Thus, foodpairing can be considered an innovative model of sensory design, opening new horizons for science, the hospitality industry, and culinary education.

References:

1. Foodpairing. The science behind great ingredient pairings. URL: <https://www.foodpairing.com/the-science-behind-great-ingredient-pairings> (Accessed: 01 August 2025).
2. Ramesh T, Gowtham M, Sahaya Jithesh SD, Immanuel N., H.M. Moyeenudin. Molecular gastronomy as a fusion of science and art: a study on its influence on the dining experience. *International Journal of Research and Review*. 2025; 12(4): 430-437. DOI: <https://doi.org/10.52403/ijrr.20250450>.
3. Róisín M. Burke, Christophe Lavelle, Hervé Jacques Marie This Vo Kientza. *Handbook of Molecular Gastronomy Scientific Foundations, Educational Practices, and Culinary Applications*, 2021 DOI:10.1201/9780429168703.
4. Maurits de Klepper. Food Pairing Theory: A European Fad. *Gastronomica: The Journal for Food Studies*. November 2011. DOI: 10.1525/gfc.2012.11.4.55.
5. Deliciously Plated. Food Pairings: It's More Science Than You Think URL: <https://deliciouslyplated.com/food-articles/food-pairings-science> (Accessed: 02 August 2025).
6. Kobe Jones Blog. 10 Japanese Flavour Combinations to Try for Maximum 'Umami' URL: <https://www.kobejones.com.au/10-japanese-flavour-combinations-try-maximum-umami/> (Accessed: 01 August 2025).
7. Jain A., Rakhi N., Bagler G. Spices form the basis of food pairing in Indian cuisine. URL: https://www.researchgate.net/publication/272359108_Spices_form_the_basis_of_food_pairing_in_Indian_cuisine (Accessed: 03 August 2025).
8. EIT Food. Foodpairing NV. Startups Database URL: <https://www.eitfood.eu/community/startups/foodpairing> (Accessed: 03 August 2025).