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ANALYSIS OF THE CONSUMER EVALUATION RESULTS OF A NEW HEALTHY HONEY DESSERT

Adamchuk L. O. *– Doctor of Technical Sciences, Associate Professor,*
Leading Researcher
Institute of Veterinari Medicine of the National Academy of Agrarian Sciences of Ukraine,
Independent Research Institute "Ukrainian Science Hub"
ORCID ID: 0000-0003-2015-7956

Chechitko V. I. *– Postgraduate Student*
National University of Life and Environmental Sciences of Ukraine
ORCID ID: 0000-0002-8965-9615

Antoniv A. D. *– PhD in Food Technology*
Independent Research Institute "Ukrainian Science Hub"
ORCID ID: orcid.org/0000-0002-6614-4248

Brindza Jan *– PhD in Biotechnology Science, Associate Professor*
Slovak University of Agriculture in Nitra
ORCID ID: 0000-0001-8388-8233

The relevance of this study lies in the need for scientific justification for the development of wellness-oriented honey-based desserts, as well as in determining consumer perception of the new product, identifying its target audience, and assessing their requirements for organoleptic characteristics. The research focused on analyzing consumer preferences for honey desserts, their sensory attributes, and the key factors influencing purchasing decisions. Four new honey-based dessert formulations – "Anti-inflammatory", "Regenerating", "Multicomplex", and "Youth and Beauty" – were evaluated using both expert assessment (10 trained experts) and consumer testing (150 respondents from various age groups). Sensory data were processed using analysis of variance (ANOVA). The study included an assessment of consumer perception based on several indicators, considering gender-specific factors. The "Youth and Beauty" formulation received the highest expert scores for organoleptic parameters, particularly taste. It also achieved the most favorable consumer feedback, demonstrating a high level of satisfaction and a 73 % purchase likelihood. The "Regenerating" formulation was highly rated for its pronounced color and aroma during expert evaluation, while consumers preferred it for its perceived health benefits, suggesting strong market potential (71 %). The "Anti-inflammatory" formulation

requires further optimization due to unsatisfactory texture, especially among older consumers (aged 46–65). The "Multicomplex" formulation showed the most balanced performance across all factors and a moderate level of consumer acceptance. Overall, consumer choices across all formulations were primarily driven by taste rather than health impact or price. Gender analysis revealed that the optimal target audience for marketing strategies consists of women aged 26 to 45 years. The scientific novelty of this study lies in its integrated approach to investigating the sensory characteristics of a new honey dessert using both expert and consumer evaluations. The practical value of the research lies in its contribution to precise target audience segmentation, formulation refinement, and the development of market promotion strategies aimed at enhancing the competitiveness of new wellness products.

Key words: *sensory analysis, aroma, texture, color, taste properties.*

Адамчук Л. О., Чечітко В. І., Антонів А. Д., Бріндза Я. Аналіз результатів споживчого оцінювання нового медового десерту оздоровчого призначення

Актуальність дослідження полягає у необхідності наукового обґрунтування щодо випуску оздоровчих медових десертів, встановленні сприйняття споживачами нового продукту, визначення цільової аудиторії та вимог до органолептичних характеристик десерту. Дослідження було зосереджено на аналізі споживчих переваг медових десертів, їхніх сенсорних характеристик, а також ключових факторів, які впливають на прийняття рішень щодо придбання продукту. Було проаналізовано чотири нових рецептури медового десерту: «Протизапальний», «Відновлюючий», «Multicomplex» і «Молодість та краса» з використанням методів експертного (10 фахівців) та споживчого оцінювання (150 респондентів різних вікових груп) сенсорних характеристик продукту з подальшою обробкою даних через дисперсійний аналіз (ANOVA). Проведено аналіз сприйняття продукту споживачами за низкою показників із врахуванням гендерного підходу. Рецептура «Молодість та краса» отримала найвищі бали згідно з експертним оцінюванням за органолептичними показниками, зокрема смаком. Ця рецептура у подальшому мала найкращий відгук поміж споживачів, високий рівень задоволеності та ймовірності придбання (73 %). Рецептура «Відновлюючий» була високо оцінена за яскраво виражений колір та аромат під час експертного оцінювання, а споживачі обирали цей десерт за показниками впливу на здоров'я. В результаті рецептура має високий потенціал до впровадження на ринку (71 %). «Протизапальний» потребує додаткової оптимізації через незадовільну текстуру, особливо у старшій віковій групі споживачів (46–65 років). «Мультикомплекс» продемонструвала найбільш збалансовані показники за всіма факторами та посередній рівень сприйняття споживачами. Загалом, вибір споживачів усіх рецептур був зумовлений саме смаком, а не впливом на здоров'я чи ціною. За результатами гендерного аналізу, встановлено категорію споживачів на який слід спрямовувати маркетингові стратегії, це жінки віком від 26 до 45 років. Наукова новизна дослідження полягає в комплексному підході до дослідження сенсорних характеристик нового медового десерту з використанням експертного та споживчого оцінювання. Практична цінність дослідження полягає у створенні бази для точного сегментування цільової аудиторії, вдосконалення рецептур та формування стратегії ринкового просування, що сприятиме підвищенню конкурентоспроможності нових оздоровчих продуктів.

Ключові слова: *сенсорний аналіз, аромат, текстура, колір, смакові властивості.*

Introduction. The modern food industry actively explores opportunities to create products that combine high nutritional value with health benefits. Honey, as a natural product rich in biologically active substances, is a promising ingredient for the development of innovative desserts [1]. Recent studies demonstrate a growing interest in the organoleptic evaluation of such products, allowing for the assessment of their quality, consumer perception, and commercial potential [2]. Scientists have identified Mazafati date honey as a promising component for functional desserts, as it enhances both flavor and health properties while supporting principles of environmental sustainability. The optimal ratio of honey (10.4 %) and probiotics (0.20 %) ensures balanced sensory characteristics and probiotic viability [3]. Scientists [4] optimized a honey-based gel using kappa-carrageenan and locust bean gum, achieving maximum gel strength and desirable sensory qualities, including honey aroma and taste. This innovation supports broader use of honey and polysaccharides in commercial food products.

George et al. [5] found that ice cream made with different varieties of New Zealand honey (clover, bush, pōhutukawa, rewarewa, kamahi, thyme) contains a significant amount of polyphenols, including quinic acid, pinocembrin, hydroxybenzoic acid, pinobanksin, and chrysin. Thyme and clover honey ice cream showed the highest polyphenol levels. Ice cream sweetened with sucrose and pōhutukawa, rewarewa, and kāmahi honey were the most favored by consumers, highlighting its sensory appeal and nutritional value.

Scientists [6] have found that it is important to develop ready-to-eat meals with high nutritional value for older adults (65+), particularly breakfasts and desserts. It has been proven that despite health benefits, consumers tend to prefer flavors like chocolate and sugar over honey or vanilla. This highlights the need to explore new flavor solutions for healthy honey-based desserts.

Functional foods are gaining significant popularity. Research confirms that ginger syrup, made with natural ingredients like honey and lemon, effectively addresses health issues such as nausea, digestion disorders, and respiratory discomfort. Optimal concentrations ensure its safety, stability, and efficacy, highlighting its benefits for digestion, immunity, and herbal remedies in both modern and traditional medicine [7]. Chuensun & Intipunya [8] optimized the candy formula by incorporating 10 % black garlic vinegar, 17.06 % gelatin, and 27.94 % honey. The product received high consumer ratings for its organoleptic properties, including taste, aroma, and texture, with 98 % of respondents finding it acceptable and 78 % expressing a willingness to purchase it.

The study showed that replacing sugar and glucose syrup with honey and blueberry concentrate in jelly candy production significantly boosted antioxidant activity and increased the levels of phenolic and flavonoid compounds. The jelly candy with the highest amount of blueberry concentrate demonstrated the strongest antioxidant properties, while the version containing equal proportions of honey and blueberry concentrate received the most favorable consumer feedback. These findings emphasize the potential of natural ingredients in creating healthier and appealing confectionery products.

When introducing innovative products to the market, significant emphasis is placed on their organoleptic properties. The study by [9] highlighted the potential of utilizing natural products with pronounced aromas as key ingredients in the development of innovative offerings.

The relevance of this study lies in the need to develop desserts that not only satisfy consumers' taste preferences but also contribute to their health. The aim of the research is to analyze the results of the organoleptic evaluation of a new honey-based dessert with health benefits, determining its quality and market potential. The objectives of the study include assessing the sensory characteristics of the product, analyzing consumer perception, and identifying innovative aspects of the development process. The scientific novelty of the research lies in the comprehensive approach to evaluating a honey-based dessert, incorporating modern sensory analysis methods and considering the product's health benefits.

Materials and methods. The study employed a comprehensive approach, including sensory analysis, surveys to evaluate consumer perception and measure satisfaction, purchase intentions, and overall product appeal, as well as statistical analysis using Analysis of Variance (ANOVA) techniques to determine the significance of the results.

The materials used included four developed recipes for honey-based desserts with health-promoting effects. These recipes incorporated ingredients such as sunflower honey, dried pumpkin powder, dried apples, pumpkin seed meal, ground fenugreek,

sesame seeds, tableted spirulina powder, freeze-dried raspberry berries, sea buckthorn, water-based propolis extract, bee pollen, and adsorbed royal jelly, along with regulatory documents and quality certificates for the raw materials.

Sensory Analysis. The organoleptic characteristics of the dessert were evaluated by an expert panel consisting of 10 trained assessors using standardized methodologies. The selection of experts followed ISO 8586 guidelines, and the evaluation process adhered to the general principles outlined in ISO 13299. A descriptive analysis was conducted using the Quantitative Descriptive Analysis (QDA) method. The experts assessed the dessert's color, taste, aftertaste, texture, aroma, consistency, and palatability.

Methodology of Consumer Perception Evaluation. The closed questionnaire method was employed, utilizing a numerical 10-point scale for the assessment of descriptors by respondents. The survey ensured the uniformity and clarity of questions to eliminate ambiguity and maintain data consistency. The tasting sessions were conducted under controlled and identical conditions to minimize errors. The survey encompassed three distinct consumer groups, with 50 respondents in each, representing different age ranges for result representativeness:

Group (G1) 1 (18–25 years): consisted of 25 males (subgroup 1M) and 25 females (1F);

G2 (26–45 years): 25 males (2M) and 25 females (2F);

G3 (46–65 years): 25 males (3M) and 25 females (3F).

Each group evaluated four dessert formulations, providing a comprehensive and diverse set of data for analysis. This approach ensured balanced representation across age and gender demographics.

Statistical Analysis. Analysis of variance (ANOVA) was employed to analyze the data obtained from sensory and consumer evaluations. The organoleptic scores of the dessert were aggregated for each descriptor. Consumer survey results were organized according to three age groups. An ANOVA model was constructed for each descriptor to examine the influence of individual factors – consumer group, age category, and dessert ingredients – on the evaluation scores. The ANOVA results were used to assess the statistical significance of differences in mean ratings across groups. Indicators such as the F-statistic and p-value were considered to determine whether the observed differences were statistically significant. Interpretation of the analysis results enabled conclusions to be drawn regarding the influence of dessert components and consumer age groups on product perception and evaluation.

Results and Discussion. During the formulation of the recipes, a comprehensive evaluation of consistency, taste, color, aroma, and texture was conducted, as these organoleptic parameters are critical determinants of consumer preference and product acceptance. Four distinct formulations were developed, each incorporating unique biologically active components to enhance their functional properties and nutritional value (Tab. 1–4).

All honey dessert formulations were standardized by incorporating dried pumpkin, serving as a source of dietary fiber, proteins, carbohydrates, fatty acids, and carotenoids, alongside pumpkin seed meal to enrich the recipes with high-quality vegetable proteins, phenolic compounds, phytoestrogens, fatty acids, carotenoids, and essential minerals. These components were selected as essential base ingredients for all recipes to ensure both nutritional enhancement and functional value.

Research conducted by various scientists on the nutritional and dietary properties of pumpkin also highlights its multifaceted benefits and significant role in promoting human health through a wide range of therapeutic effects. For instance, emphasize

the antioxidant, anti-inflammatory, and antimicrobial properties of pumpkin, which contribute to improving overall health and preventing chronic diseases [10]. Patel et al. [11] focus on the bioactive components of pumpkin seeds, such as phytosterols, unsaturated fatty acids, and phenolic compounds, which exhibit antidiabetic and antihypertensive effects. Moreover, Gavril et al. [12] examine pumpkin and its by-products as sources of oleic acid, carotenoids, and polyphenols, which play a substantial role in supporting the immune system, regulating metabolism, and reducing the risk of cardiovascular diseases.

The 'Anti-inflammatory' dessert was formulated with spirulina and propolis water extract as supplementary ingredients, contributing to its characteristic dark green coloration and a unique halva-like flavor profile (Tab. 1).

Table 1

QDA Results for Dessert "Anti-inflammatory" (formulation 1, *n* = 10)

Image	Characteristic	Average Score*	Description
	color	9.2	dark green, natural, with vibrant saturation
	aroma	8.7	fresh, with notes of greenery and forest, well-balanced
	taste	8.5	unusual, reminiscent of halva, harmonious and appealing to most experts
	aftertaste	8.3	light, pleasant, with lingering notes of propolis
	texture	9.0	uniform, smooth, without graininess or undesirable properties
	consistency	8.8	balanced, neat, visually attractive, meeting high-quality standards

Note: * on a scale of 0–10.

Source: developed by the authors from their research; photo by Maryna Chmiel.

Experts highlighted in their evaluation that the texture was uniformly smooth, complemented by an aroma evocative of fresh greenery and forest nuances. Spirulina was integrated to elevate the bioactive attributes of the desert through its constituent compounds, including the protein phycocyanin and γ-linolenic acid. Propolis, distinguished by its abundant polyphenolic content, was added to impart antimicrobial properties, thereby further enhancing the functional characteristics of the product.

The findings of other researchers demonstrate the extensive potential applications of spirulina and propolis in enhancing the functional properties of food products. For instance, Shrivastava et al. [13] explored the incorporation of spirulina into chocolate formulations, enriching the product with proteins, such as phycocyanin, and fatty acids, including γ-linolenic acid. Their optimization methodology significantly improved the functional characteristics of the product, particularly its antioxidant capacity.

AlFadhly et al. [14] provided an in-depth review of spirulina's bioactive components, including phenolic compounds, polysaccharides, and protein structures, highlighting their pronounced antioxidant, anti-inflammatory, and immunomodulatory effects. These

properties underscore the versatility of spirulina as an ingredient in functional food products, including desserts.

Propolis has also garnered substantial interest among researchers. Al Marzooqi et al. [15] investigated its antimicrobial properties, attributed to its high polyphenolic content, and its antioxidant potential, which effectively extended the shelf life of food products. Although their study focused on meat preservation, the functional attributes of propolis could be effectively utilized in desserts to enhance their bioactive profile.

The 'Regenerating' dessert was formulated with freeze-dried raspberries and natural granules of bee bread as supplementary ingredients (Tab. 2).

Table 2

QDA Results for Dessert "Restorative" (formulation 2, *n* = 10)

Image	Characteristic	Average Score*	Description
	color	9.4	Rich raspberry color, natural, and vibrant
	aroma	8.9	Distinct raspberry aroma with a refreshing note
	taste	8.6	Slightly tart, refreshing, harmonious
	aftertaste	8.4	Light, pleasant, long-lasting with raspberry notes
	texture	7.8	Non-uniform, lumpy, with a slightly fluffy structure
	consistency	7.5	Fairly good but somewhat uneven due to the inclusion of natural bee bread granules

Note: * on a scale of 0–10.

Source: developed by the authors from their research; photo by Maryna Chmiel.

It featured a vibrant raspberry hue and aroma, alongside a heterogeneous, lumpy texture and a somewhat loose consistency. The flavor profile included a subtle sourness, contributing a refreshing characteristic. Raspberries were incorporated as a source of antioxidant polyphenols and phytonutrients, known for their potential in modulating insulin functionality. Additionally, bee bread was added to enhance the nutrient profile with fatty acids, amino acids, minerals, polyphenols, and vitamins, further bolstering the functional properties of the dessert.

The findings of other researchers underscore the promising applications of freeze-dried raspberries and bee bread in enhancing the functional properties of food products. For example, Pecyna et al. [16] demonstrated the impact of incorporating dried raspberry pomace into gluten-free bread, significantly increasing total polyphenol content by 81.75 % and antioxidant capacity by 159.54 % (as measured by the ABTS assay). This highlights the potent antioxidative properties of raspberries, making them an excellent functional ingredient for various food formulations. Marino et al. [17] further elaborated on the nutritional and phytochemical profile of freeze-dried raspberries, identifying high levels of anthocyanins, such as cyanidin-3-glucoside, and essential fatty acids, such as linoleic acid. These compounds contribute to raspberries' health-promoting properties, particularly in modulating metabolic functions.

Ertosun et al. [18] investigated the integration of bee bread into food products, noting its ability to enhance nutritional value due to its rich composition of amino acids, polyphenols, vitamins, and fatty acids. Additionally, bee bread's antimicrobial properties and its contribution to the sensory profile of products underscore its functional potential. Together, these studies align with the incorporation of freeze-dried raspberries and bee bread in the 'Regenerating' dessert, showcasing their multifaceted benefits in improving antioxidant capacity, nutritional value, and sensory appeal.

The 'Multicomplex' dessert was enriched with fenugreek, freeze-dried sea buckthorn, and bee pollen as additional functional ingredients (Tab. 3).

Table 3

QDA Results for Dessert "Multicomplex" (formulation 3, *n* = 10)

Image	Characteristic	Average Score*	Description
	color	7.5	non-uniform, with natural variations ranging from yellow to light orange
	aroma	8.2	fresh, with light citrus notes typical of sea buckthorn
	taste	7.0	very sour, sharply pronounced, refreshing
	aftertaste	7.1	light, sour, lasting, with a refreshing effect
	texture	6.8	lumpy, non-uniform, due to the inclusion of pollen and fenugreek powder
	consistency	6.5	liquid, unstable, but natural for the dessert's composition

Note: * on a scale of 0–10.

Source: developed by the authors from their research; photo by Maryna Chmiel.

This dessert was evaluated by experts as having a heterogeneous color and texture, accompanied by a liquid consistency. Its flavor profile was characterized as distinctly sour, delivering a sharp and refreshing sensory experience. Fenugreek seeds served as a source of essential nutrients, including protein, dietary fiber, fatty acids, and folic acid. Freeze-dried sea buckthorn was incorporated to enhance the formulation with bioactive compounds such as oleic acid, omega-3 and omega-6 fatty acids, phytosterols, carotenoids, and polyphenols. Bee pollen further contributed to the dessert's nutritional profile by supplying polyphenols, lipids, essential minerals, vitamins, and phenolic compounds, collectively amplifying its health-promoting attributes.

The analysis of recent studies emphasizes the promising use of fenugreek, freeze-dried sea buckthorn, and bee pollen in the development of functional food products. Choudhary [19] highlighted the nutritional and therapeutic potential of fenugreek seeds, specifically their rich content of proteins, dietary fibers, fatty acids, and folic acid. These components are integral in supporting metabolic functions and providing antioxidant effects, making fenugreek a valuable ingredient in functional formulations. Mihal et al. [20] explored the bioactive constituents of freeze-dried sea buckthorn, emphasizing its high levels of oleic acid, omega-3 and omega-6 fatty acids, phytosterols, carotenoids, and polyphenols. These compounds have shown significant antioxidant, anti-inflammatory,

and metabolic benefits, underscoring sea buckthorn's functional versatility, particularly in nutritional products like desserts.

Ertosun et al. [21] demonstrated the functional attributes of bee pollen, identifying its ability to enrich food products with polyphenols, lipids, minerals, vitamins, and phenolic compounds. The study also emphasized its antimicrobial properties and contribution to sensory characteristics, making it a multifaceted ingredient for boosting both nutritional value and product appeal. These findings provide substantial support for the inclusion of fenugreek, freeze-dried sea buckthorn, and bee pollen in the 'Multicomplex' dessert, showcasing their collective impact on enhancing bioactive profiles, sensory properties, and overall nutritional value.

The dessert 'Youth and Beauty' was enriched with sesame seeds, freeze-dried apple, and royal jelly as functional ingredients (Tab. 4).

Table 4

QDA Results for Dessert "Youth and Beauty" (formulation 4, *n* = 10)

Image	Characteristic	Average Score*	Description
	color	8.8	delicate, pastel, with light yellowish hues
	aroma	9.2	pleasant, gentle, with subtle fruity notes of apple
	taste	9.0	very delicate, well-balanced, with a lightly sweet accent
	aftertaste	8.7	light, pleasant, with lingering fruity notes
	texture	9.4	paste-like, uniform, soft, and pleasant to the touch
	consistency	9.3	uniform, ideal for this type of dessert

Note: * on a scale of 0–10.

Source: developed by the authors from their research; photo by Maryna Chmiel.

This formulation, as evaluated by experts, featured the most delicate taste and aroma, complemented by a pleasant, pasty texture. Sesame seeds contributed bioactive compounds, including phytosterols, tocopherols, lignans, sesamin, sesaminol, and fatty acids, enhancing the dessert's nutritional and functional profile. Freeze-dried apple served as a source of dietary fiber, anthocyanins, and polyphenols, further enriching the dessert with antioxidant and health-promoting properties. Royal jelly provided a unique composition of neurotransmitters, antibacterial proteins, peptides, fatty acids, and phenolic compounds, amplifying the dessert's therapeutic potential and overall bioactivity.

The analysis of scientific studies emphasizes the functional potential of sesame seeds, freeze-dried apple, and royal jelly as key ingredients in food products aimed at enhancing health and wellness. Jafari et al. [22] highlighted the bioactive properties of sesame seeds, particularly their content of phytosterols, tocopherols, lignans, sesamin, and sesaminol, which are associated with improved lipid profiles, reduced inflammation, and oxidative stress management. Mostashari & Khaneghah [23] analyzed freeze-dried apple, noting its rich composition of dietary fiber, anthocyanins, and polyphenols, which contribute to its antioxidant properties and potential benefits for cardiovascular

and metabolic health. The freeze-drying process was also highlighted as a method for preserving these bioactive compounds, making apple powder an effective functional ingredient.

Furthermore, Oboulbiga et al. [24] explored the properties of royal jelly, focusing on its neurotransmitter content, antibacterial proteins, peptides, and phenolic compounds. These components have been linked to improved immune response, antibacterial activity, and enhanced overall bioactivity of food formulations. Collectively, these studies validate the incorporation of sesame seeds, freeze-dried apple, and royal jelly into the 'Youth and Beauty' dessert, not only for their contribution to taste and texture but also for their substantial health-promoting and therapeutic potential.

The next stage was Consumer Perception Evaluation. The results are shown in Fig. 1.

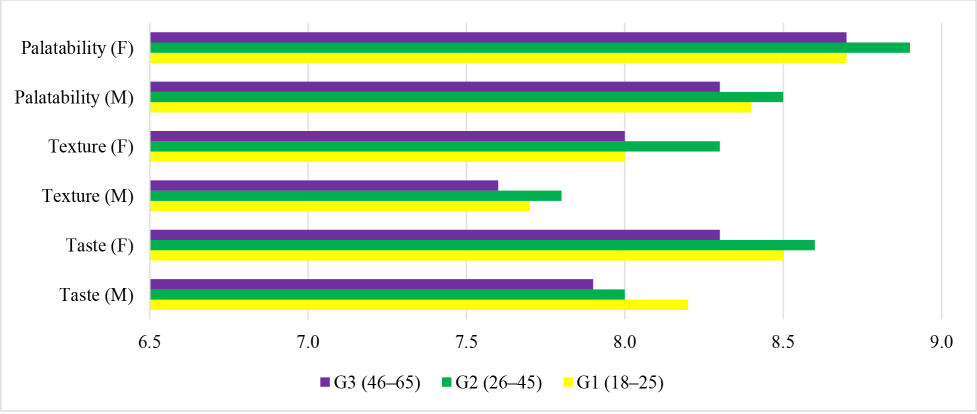

Fig. 1. Mean consumer evaluation scores by sensory analysis descriptors across age and gender

Note: G1–G3 – years, age groups; M – male, F – female; 6.5–9.0 – consumer rating scores on a 10-point scale; n = 150 participants, 25 in each subgroup.

Source: developed by the authors from their research.

According to the results, the highest evaluation scores were recorded among female consumers aged 26–45 years. Texture was identified as the least favored sensory attribute, likely due to consumer expectations for a honey-like product. Overall palatability was the highest indicator, as participants attributed it to the harmony of taste and aroma. Similar results were also obtained during the evaluation of mead made from acacia and eucalyptus honeys [25]. Scientists emphasize the importance of selecting appropriate ingredients, proposed further research into exotic honey varieties, and the use of herbs and fruits to enhance aromatic profiles.

Researchers [26] have also recommended further investigation into consumer perception of food, which would not only enhance understanding of the market but also foster greater trust among future customers. Informational asymmetry between producers, consumers, and regulatory bodies remains a key factor contributing to consumer skepticism regarding the safety and reliability of both the product and its manufacturer. This persists despite advancements in food labeling practices, which now include product names, ingredient lists, nutritional information, and health-related claims. Nevertheless, the comprehension of such information is often limited to professionals in the field, thereby hindering informed decision-making among the general public.

An analysis of variance (ANOVA) was performed to verify the reliability of the results. The following hypotheses were examined:

Null Hypothesis (H_0). There are no statistically significant differences in the mean scores of the descriptors (taste, texture, satisfaction) across age groups (G1, G2, G3) or between gender subgroups (male and female).

Alternative Hypothesis (H_1). There are statistically significant differences in the mean scores of the descriptors between at least one of the age groups or gender subgroups.

The ANOVA results are summarized in Table 5.

Table 5

ANOVA for descriptor ratings across age groups and gender subgroups

Descriptor	Age group		Gender subgroup	
	F-statistic	p-value	F-statistic	p-value
Taste	4.21	0.02	3.45	0.03
Texture	5.12	0.01	2.89	0.04
Palatability	6.78	0.005	4.25	0.02

The analysis of variance (ANOVA) revealed statistically significant differences in descriptor ratings (taste, texture, satisfaction) both across age groups (G1, G2, G3) and gender subgroups (male, female). The findings were analyzed for each descriptor separately to identify key consumer preferences and trends.

The F-statistic value of 4.21 and p-value of 0.02 indicate the presence of significant differences in taste ratings across age groups G1, G2, and G3. Younger consumers (G1) provided the highest average taste rating (8.2), while older consumers (G3) exhibited the lowest average taste score (7.9). This suggests that the dessert formulations may have been optimized for the flavor preferences of younger demographics but are less aligned with the expectations of older groups. Texture ratings also showed significant differences ($F = 5.12$; $p = 0.01$). Average scores indicate a decline with age: G1 – 7.7, G2 – 7.8, G3 – 7.6. This trend could reflect differences in physiological characteristics or expectations regarding dessert consistency across age groups. An F-statistic of 6.78 ($p = 0.005$) highlights significant differences in overall satisfaction with the product (palatability). The highest average scores are observed for group G2 (8.5), potentially due to the balance of flavor and texture characteristics appealing to this middle-aged demographic.

Gender analysis also confirmed statistically significant differences in all descriptors: taste ($F = 3.45$; $p = 0.03$), texture ($F = 2.89$; $p = 0.04$), satisfaction ($F = 4.25$; $p = 0.02$). Female consumers consistently provided higher ratings across all parameters (e.g., average taste rating for females in G2 – 8.6, for males – 8.0). This could suggest that women are more positively inclined toward the dessert formulations or employ a more discerning approach to evaluation.

Figure 2 presents consumer evaluation results for various product formulations.

Satisfaction scores (palatability) were compared across four dessert formulations, three age groups (G1, G2, G3), and gender subgroups (male, female) using analysis of variance (ANOVA). The hypotheses tested were as follows:

1. Null Hypothesis (H_0). There are no statistically significant differences in satisfaction ratings among the dessert formulations.

2. Alternative Hypothesis (H_1). At least one dessert formulation exhibits a statistically significant difference in satisfaction ratings compared to the others.

The ANOVA results are summarized in Table 6.

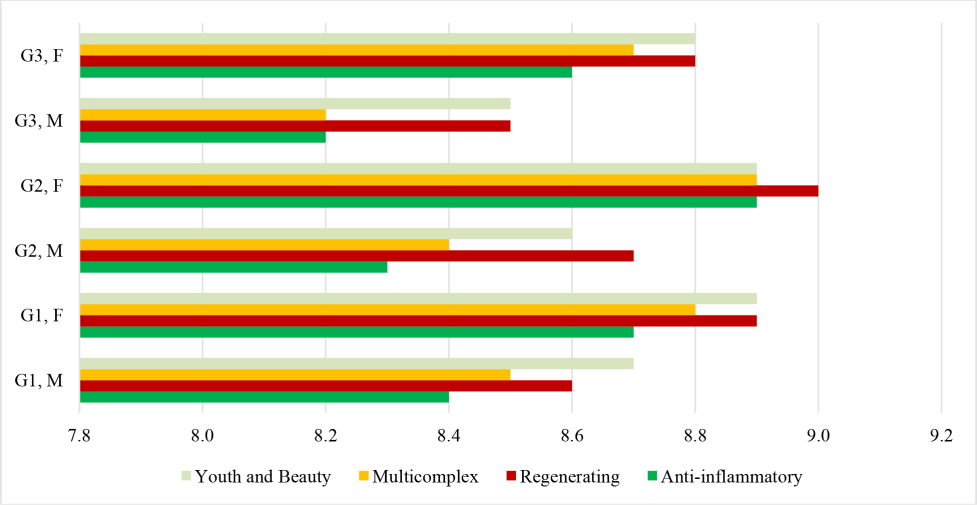

Fig. 2. Mean consumer evaluation scores by palatability across palatability different formulation

Note: G1–G3 – years, age groups; M – male, F – female; 6.8–9.2 – consumer rating scores on a 10-point scale; n = 150 participants, 25 in each subgroup.

Source: developed by the authors from their research.

Table 6

ANOVA for dessert palatability across age groups and gender subgroups

Dessert	F-statistic	p-value
Anti-inflammatory	3.98	0.016
Regenerating	4.45	0.011
Multicomplex	3.82	0.019
Youth and Beauty	4.68	0.009

The p-values for all formulations are below the threshold of 0.05, confirming statistically significant differences in satisfaction ratings among the dessert formulations. The "Youth and Beauty" formulation consistently received higher satisfaction ratings across all age groups and genders, suggesting strong consumer appeal. The "Anti-inflammatory" formulation showed slightly lower scores in the G3 age group, indicating a need for further optimization to enhance satisfaction among older consumers. Palatability ratings varied significantly between age groups, with younger consumers (G1) and middle-aged consumers (G2) demonstrating stronger preferences for the Regenerating and Youth and Beauty formulations.

Texture perception plays a significant role in taste evaluation. Selective taste steering is a concept referring to the ability to influence taste perception through various factors such as aroma, texture, and food temperature. Researchers have demonstrated the crucial role of selective taste steering for cancer patients who have partially lost taste receptor function [27].

The influence of key factors on consumer choice was assessed based on taste preferences, dessert cost, and perceived health impact for each formulation. Following the statistical processing of responses, the results were visualized using pie charts with percentage indicators (Fig. 3).

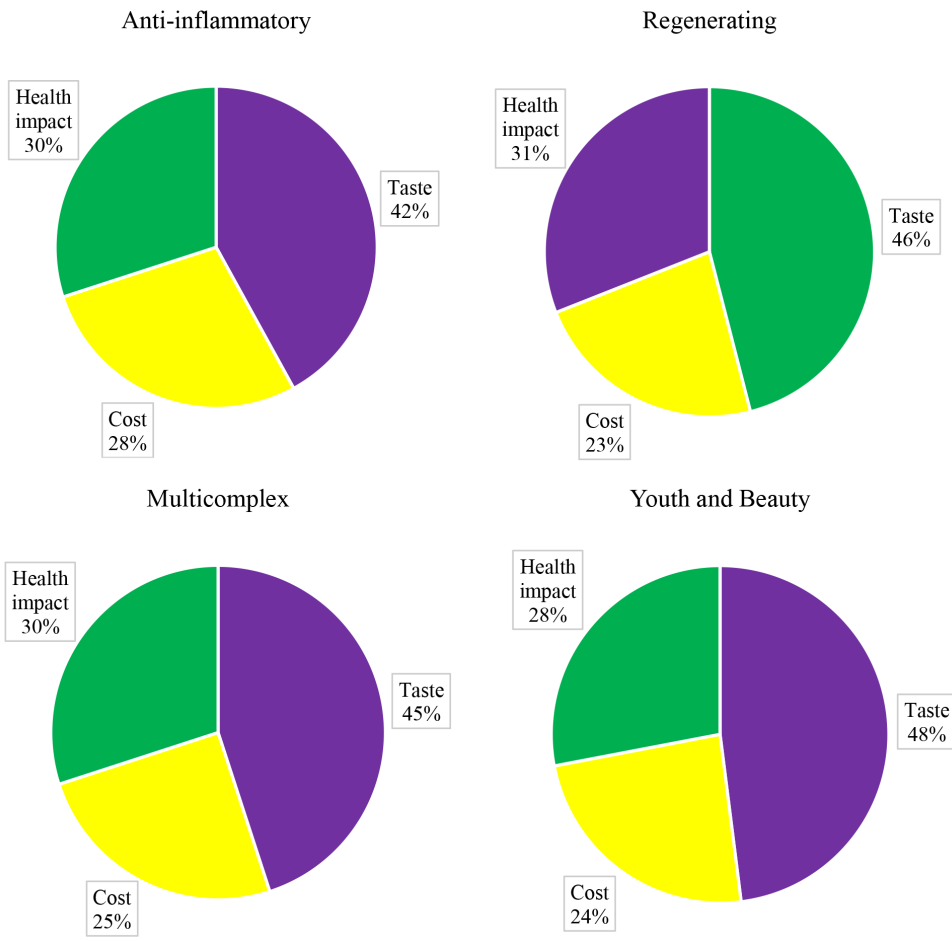

Fig. 3. Distribution of factors influencing a consumer's decision to purchase a new dessert
Note: *n* = 150 participants.
Source: developed by the authors from their research.

Across all formulations, "taste" emerged as the most significant factor for consumers, carrying the highest percentage weight in the distribution. The "Youth and Beauty" formulation ranked highest for taste (48 %), indicating strong appeal to consumers who prioritize flavor enjoyment. "Regenerating" also showed a high score (46 %), suggesting substantial potential for attracting consumers focused on taste qualities.

The importance of «price» varied between formulations but remained the least weighted factor overall. "Regenerating" received the lowest importance rating for price (23 %), indicating that consumers may value other attributes, such as taste and health impact, more strongly. "Multicomplex" and "Youth and Beauty" had slightly higher price importance scores (25 % and 24 %, respectively), reflecting a more balanced consumer evaluation approach.

For the "Regenerating" formulation, the "health" factor had the highest weight (31 %) among all desserts, suggesting a strong appeal to health-conscious consumers who also appreciate flavor. "Anti-inflammatory" and "Multicomplex" recorded identical health

importance scores (30 %), indicating a balanced perception between health impact and other factors. In "Youth and Beauty", the health factor was rated the lowest (28 %), yet this was offset by the dominant importance of taste.

Based on the findings, the "Youth and Beauty" formulation demonstrated the highest consumer satisfaction, particularly in terms of taste, making it the most promising candidate for initial market introduction. Marketing efforts should emphasize the indulgent flavor profile, targeting younger to middle-aged female consumers (ages 26–45), who showed a higher preference for taste and sensory experience.

The «Regenerating» formulation, with its high ratings in both taste and health, is well-suited for a subsequent product line extension aimed at health-conscious consumers. Messaging should focus on functional benefits without compromising flavor.

Clinical or nutritional studies evaluating the actual health effects of each dessert formulation may strengthen claims related to health benefits and appeal to functionally motivated consumers.

The process of dessert selection is influenced by multiple factors, including sensory characteristics, health impact, price, and overall product satisfaction. Based on consumer preference data, the likelihood of purchase was determined according to the specific formulation of each dessert (Fig. 4).

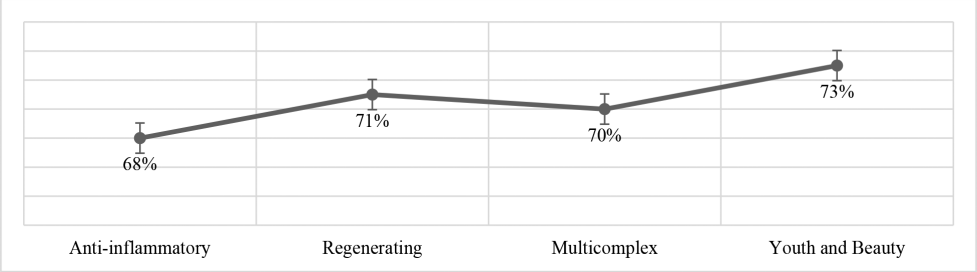

Fig. 4. Likelihood of purchase according to dessert formulation

Note: $n = 150$ participants.

Source: developed by the authors from their research.

The analysis of the likelihood of purchasing desserts revealed that the "Youth and Beauty" formulation achieved the highest score (73 %), indicating its strong appeal to consumers. This result can be attributed to the harmonious balance of flavor characteristics and the attractive positioning of the product.

In second place are the desserts "Regenerating" (71 %) and "Multicomplex" (70 %), which demonstrate consistently high levels of consumer interest. This underscores their competitiveness in the category of functional desserts that combine taste with health benefits.

The "Anti-inflammatory" formulation shows the lowest score (68 %), although it remains sufficiently high for effective market representation. Further analysis should focus on improving texture or other characteristics to increase its attractiveness among the target audience.

Thus, the data not only evaluate the current level of consumer interest but also establish a foundation for optimizing formulations and enhancing the competitiveness of products in the market.

Conclusions. The study conducted a comprehensive analysis of consumer preferences, sensory characteristics of the products, and key factors influencing

dessert purchase decisions. Data for the various formulations ("Anti-inflammatory", "Regenerating", "Multicomplex", and "Youth and Beauty") were systematically organized, their respective strengths and weaknesses were identified, and an analysis of variance (ANOVA) was performed. The results confirmed statistically significant differences among the formulations across multiple evaluated parameters.

The 'Youth and Beauty' formulation received the highest satisfaction ratings from both sensory analysis experts and all consumer subgroups across age and gender, indicating a strong overall appeal.

The analysis of variance (ANOVA) of consumer ratings for sensory descriptors revealed statistically significant differences ($p < 0.05$) across age groups (G1, G2, G3) and gender (male/female). Women aged 26–45 years more frequently provided higher ratings for the taste and texture of the novel honey-based desserts. Higher scores from female consumers indicate stronger acceptance of formulations, which could be leveraged in marketing strategies. Dessert formulations require optimization for older age groups (G3), focusing particularly on improving textural characteristics.

Higher scores from female consumers indicate stronger acceptance of formulations, which could be leveraged in marketing strategies. Future research should explore specific texture preferences in desserts among older demographic groups (G3) and evaluate the potential for recipe differentiation based on gender-specific consumer preference.

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Conflict of interest. None.

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