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Influence of Brand Awareness on Sensory Perception of Fruit Juices

Summary

The purpose of this study was to determine the effect of brand awareness on the sensory evaluation of some fruit juices. Seven juice brands were selected in a survey made among respondents aged 19-25 years in Gdynia. The trained evaluators, students of the Gdynia Maritime University, performed sensory tests of orange, apple and blackcurrant juices of each brand, in blind and non-blind conditions. The overall rating and sensory descriptors were determined on the 1-10 scale. The influence of brand awareness on sensory impressions was mostly positive for the most popular and mostly negative for less popular brands. The significant descriptors were specific taste, clarity, and sweet flavour. The regression equations for relations between overall juice rating and sensory descriptors were developed. The obtained results are important for sensory marketing and food producers.

Key words: brand awareness, sensory studies, fruit juices.

JEL codes: D84, R31, Q13

Introduction

The different factors may determine the purchase of food products. Among them, the sensory perception is often considered as the most important and the brand familiarity as another significant determinant. However, there have been few studies taking into account both above factors together. This research was focused on a segment of fruit juices of different brands. The research hypotheses here developed were following: (i) the brand familiarity has an effect on sensory perception, (ii) different sensory attributes have different significance; (iii) there is a quantitative correlation between the overall assessment and various sensory attributes. The knowledge of such relations is important for sensory marketing, in particular, to recognize what sensory attributes are mainly taken into account by potential consumers of fruit juices with and without the familiarity of the brand (old and new brands).

Literature review

Purchase intention is related to the attitudes towards food products. They can be shaped by extrinsic cues, like the brand, and intrinsic, like sensory satisfaction.

There have been many studies devoted to the brand importance. The brand is seen as a promise, a guarantee or a contract with the manufacturer (Keller 1998). It belongs to the

most important non-sensory factors affecting consumers' choice of food products (Varela et al. 2010). The influence of private label image on purchase intention was partially mediated by loyalty and by manufacturer brand, and the store image and corporate reputation may enhance private label image and perceived quality (Calvo Porrall and Lang 2015). Even 95% of purchase decision may be influenced by momentary emotions (Zaltman and Zaltman 2008), including the brand value. For example, children preferred the tastes of foods and drinks if they thought they were from McDonald's (Robinson et al. 2007). In another study on food products, the brand attachment influenced consumers purchase intentions and willingness-to-pay more (Assiouras et al. 2015). The importance of store brands was ascribed to the perceived risk associated with their purchase, their perceived value and consumer satisfaction (Rubio et al. 2014).

The brand is usually visible on a label on any product and may affect the purchase decision. The packaging of a food product provides then information about brand image or lifestyle (Eldesouky et al. 2015). The impact of the brand on the purchasing decisions of Iranian children and their parents showed their positive effects on parents, but only the packaging was important for children (Taghavi and Seyedsalehi 2015). Erzurum Civil cheese consumption satisfaction was maximized with the augmented and actual product images redesigned by a private-labeled and local-branded simple product (Uzundumlu and Topcu 2016). In a study of information on chocolate labels, made either when testing blind product or testing the labeled chocolate, consumer liking was mainly affected by the brand (Torres-Moreno et al. 2012). In investigations on cookies, the restrained and unrestrained eaters' perceptions were similarly affected by branding and caloric information (Cavanagh et al. 2014).

In preference studies, the consumers were less critical in their evaluation when the assessed samples were identified by brand names (Gacula et al. 2007). A strong relationship was found between brand name and perceived quality for different brands (Beneke and Trappler 2015). Among undergraduate students, the brand name led people to evaluate the quality of food product as either higher or lower depending on the strength of the brand name (Hilgenkamp and Shanteau 2010). In an examination of blind versus non-blind taste preference ratings for various cola drinks, the national brand (Coca-Cola) was rated as the first choice significantly more often in the non-blind condition, relative to the blind condition (Breneiser and Allen 2011).

There is a variety of psychological factors, which are either associated or concurrent to the brand effect. In a study of choice of flavored milk among Belgian children (De Pelsmaeker et al. 2013) the strong relationship between brands and emotions was observed. On the other hand, the brand name was less important for purchase intent of chocolate milk than fat or sugar content (Kim et al. 2013). The significant factors influencing the purchase of branded rice and sugar were the flavor, aroma, lack of insecticides, pesticides, and adulterants (Lallit and Paramieet 2013). The effect of liking, brand and price label on purchase intention was found for crisp snacks (Bower and Turner 2001). Those reports show that there is a variety of reasons affecting the purchase decision, like the brand, sensory perception, health reasons.

The importance of such factors for consumers resulted in the development of the sensory marketing (Hultén et al. 2009; Krishna 2010; Hultén 2011) describing as the multi-sensory brand experience phenomenon affecting the consumer acceptance. However, the effect of brands on sensory perception was very seldom investigated. For dried pasta, the knowledge of brand name did not affect sensory attributes perception (Di Monaco et al. 2004). On the contrary, in the study of two brands of corn cakes, in the blind condition, the overall liking highly influenced the choice (Sosa and Hough 2006).

As concern the fruit juices, in investigations of consumers' expectations and liking of orange-flavored powdered drinks, the brand information was more important than a hedonic reaction to the sensory characteristics (Varela et al. 2010). In another study (Olsen et al. 2011) a trained sensory panel and consumers evaluated six juice samples that vary according to three factors: brand, treatment and pulp presence. There was a large discrepancy between blind liking and brand choice (Connell and Mayor 2013). Six commercial vanilla milk desserts were also evaluated under blind and informed conditions by two groups of consumers. Results showed that information had a small impact on overall liking scores and product characterizations, suggesting that consumers' perception of the desserts was mainly determined by their sensory characteristics (Vidal et al. 2013). Lawless et al. (2015) measured the effect of sensory attributes on a willingness to pay for a nutraceutical-rich juice blend using sensory evaluation. WTP increased by \$0.25 for every unit increase in sweetness, \$0.20 per every unit decrease in black cherry flavor and \$0.29 per every unit decrease in bitterness toward just-about-right (JAR) attributes.

So far results demonstrate that the effect of brand knowledge is no equivocal and may be determined by sort of product. It is still a research gap not only the influence of brand on sensory acceptance for various foods but also no studies on brand attractivity on sensory perception and significance of various sensory descriptors. This research was aimed to fulfill this gap focusing on one class of foods, fruit juices. The tests were focused on the students as the young generation is the greatest consumer group of these products.

Research methodology

The objects of this study started in 2007 were the fruit juices mostly preferred in Poland: orange juice, apple juice, and blackcurrant juice. At the preliminary study, the juice brands were selected based on a preliminary survey of eating frequency among 150 randomly chosen students of the Gdynia Maritime University, aged 19-25 yrs. Each brand was assessed at the 5 point scale (1 – not taken, 5 – mostly taken).

The panel group was composed of 33 students, all participating in pre-study. They were the persons possessing the highest sensory perception, according to ISO 8586-1:1996 standard.

In the main study, the evaluators were given the samples of all fruit juices, labeled with a fruit name and brand or blind. To assess the consumer acceptance, the profile method according to the ISO 6564:1999 standard was used. In the beginning, the panelists tasted all samples, labeled or blind samples, and listed the descriptors suitable for each sample. The

lists of descriptors were prepared according to the ISO 11035:1999 standard. The list of descriptors was made based on a collection of proposals of panelists put on their cards, and then the descriptors were defined for each fruit juice separately, and the overall assessment of all selected fruit juices was made.

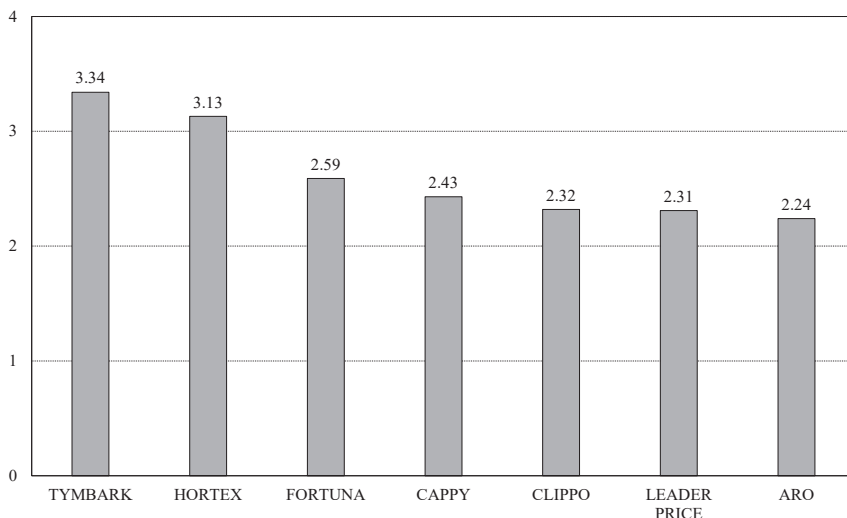
The assessment was carried out in a sensory laboratory equipped with individual positions. The samples of juices were coded and either blind or labeled with a brand name. The sensory tests were repeated for each sample, always at the same conditions. Each assessor obtained a set of samples and the assessment card with a linear scale of 10 cm with two ends with information corresponding to the used descriptor.

The multiple linear regression methods were applied to elaborate the results. For the obtained quantitative data an assessment of their distribution was made with the Shapiro – Wilk test. To compare the averages of descriptors obtained by profile method, in both labeled and blind attempt the Mann – Whitney U test was applied to the significant difference was set up at $p \leq 0.05$.

Results and discussion

Fig. 1 shows the rating of seven brands mostly preferred at the test time among 150 subjects. The six brands are still present on the Polish market, except Leader Price. Two brands, Tymbark and Hortex, were significantly assessed higher than others.

Figure 1
The rating of tested fruit juices



Source: Own work.

In Figs. 2-4 the results of sensory tests for both labeled and blind attempts are demonstrated. For orange juices, in blind tests four less popular juices possessed higher rates than in labeled tests; for apple juices – all five such brands; for blackcurrant juices - again four brands. As concerns the two most popular brands, the knowledge of brand positively affected the sensory acceptance in four of six cases. The results show the significant change of overall assessment of labeled samples comparing to the blind attempt. The juice brands possessing already strong position in the market have the highest ratings and ranks in labeled tests. Similar results were obtained in some other research works. For example, Di Monaco et al. (2004) observed such relations between the eating frequency of some pasta brands and consumer acceptance. For powdered drinks and sausages, the consumer assessment was also high for well-known and frequently purchased items (Varela et al. 2010). The product quality was better estimated for good brands (Hilgenkamp and Shanteau 2010). The present research confirms the significant effect of brand familiarity and position on the sensory assessment of products even if blind attempts demonstrate better sensory acceptance of less ranked fruit juices.

The descriptors mostly influencing the overall assessment of fruit juices were found by multiple linear regression methods. The obtained results let us propose two linear regression equations for all juices together (only significant descriptors are shown):

a) for blind attempt:

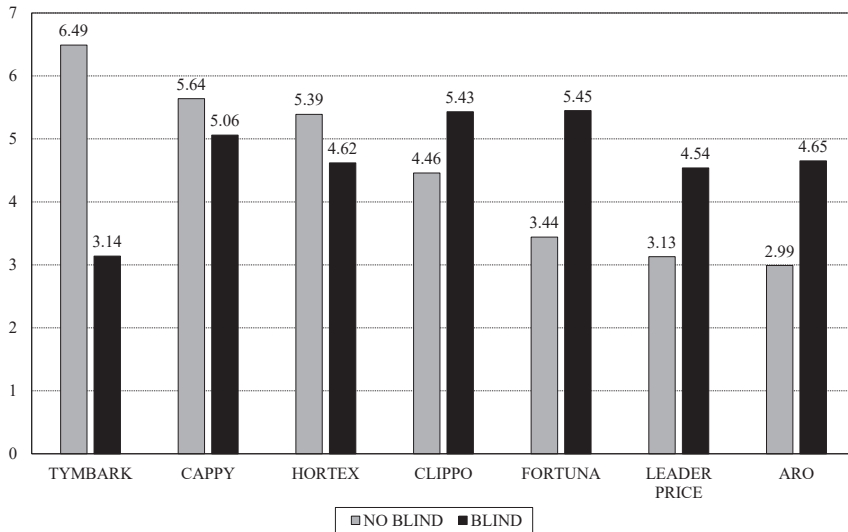
$$\text{Overall assessment} = 0.517 \times (\text{specific taste}) + 0.104 \times (\text{clarity}) + 0.101 \times (\text{sweet taste}) + 0.089 \times (\text{sour taste}) + 0.075 \times (\text{color}) + 0.016$$

b) for the non-blind attempt (only three the most significant descriptors were considered):

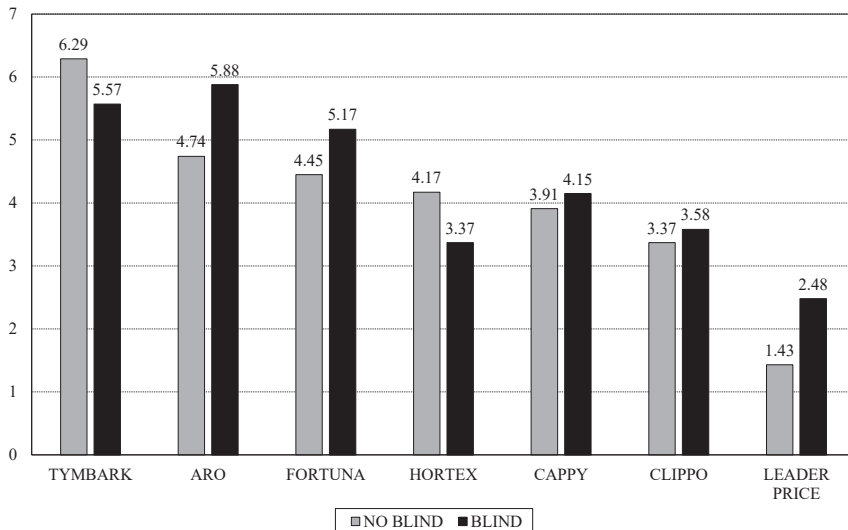
$$\text{Overall assessment} = 0.624 \times (\text{specific taste}) + 0.087 \times (\text{clarity}) + 0.082 \times (\text{sweet taste}) + 0.534$$

It is interesting that even if the brand does not affect the food acceptance (Torres-Moreno et al. 2012), it may determine the expectations towards the product. The differences between labeled and blind attempts show that the sensory perceptions are greatly influenced by the expectations of a consumer towards the brand, both positive and negative; brand knowledge may increase for better brands and decrease for less known brands the overall assessment of blind samples. The most interesting observation in present research is that the brand knowledge influences not only the overall assessment of juice but also the weight of some descriptors. It means that consumers expect, from juice brands, the taste, flavor, clarity, even if in blind tests these features are assessed at a lower level. It means, in other words, that the consumer is more careful in his/her judgment when he/she does not know the juice brand. If the product is unknown (blind test), more descriptors are necessary to rate all its features, to assess it and its quality.

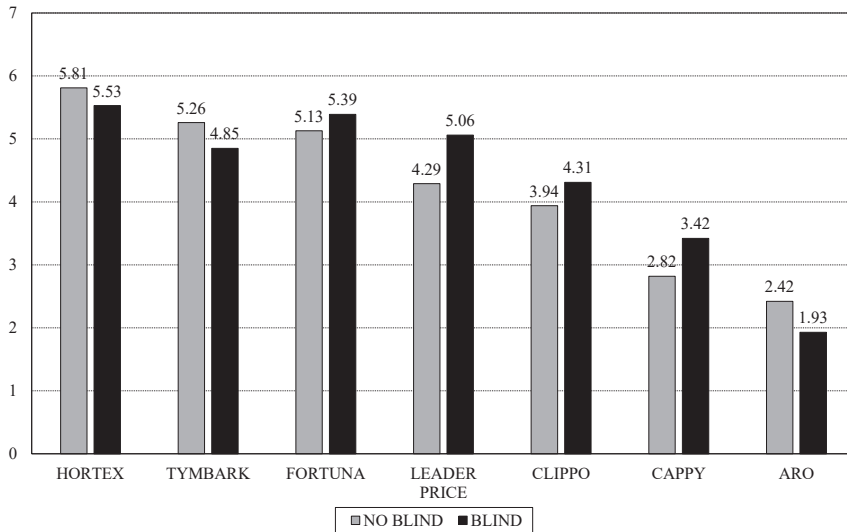
The possibility to describe the effects of different descriptors on an overall assessment is important for producers and the marketing activities. The sensory tests may then constitute

Figure 2**Acceptance of orange juices in labeled and blind tests**

Source: as in Figure 1.

Figure 3**Acceptance of apple juices in labeled and blind tests**

Source: as in Figure 1.

Figure 4**Acceptance of blackberry juices in labeled and blind tests**

Source: as in Figure 1.

an important tool to decide, how to increase the position of the less-known brand. As a limited number of descriptors is taken into account, it means a relatively low cost of consumer tests. The knowledge of sensory descriptors, which have the greatest effect on the overall acceptance of some products, is essential for the market and can be implemented to the modern marketing strategies by well-designed sensory studies (Hulten 2011; Garber et al. 2003; Moskowitz, Hartmann 2009; Tuorila, Monteleone 2009).

Conclusions

The obtained results demonstrate that the brand knowledge significantly influenced the overall acceptance of fruit juices: the sensory perception is different in blind and no blind tests. The overall acceptance depends in labeled acceptance tests on the brand position on the market: the fruit juices of the brand of stronger position on the market are assessed higher in labeled than in blind tests. Such specific results, which differentiate the market position of the brand, have never been reported in the literature.

The most significant descriptor in both blind and labeled tests is the specific taste (orange, apple, blackcurrant). The knowledge of brand influenced the assessment of the specific taste positively. Three sensory descriptors in labeled and five descriptors in labeled tests are significant. There has been so far no such investigations on the relationship between specific sensory descriptors and brand knowledge.

The present results contribute to the marketing theory by demonstration of different roles of market brand positions in sensory perception and of important sensory descriptors, and by the development of regression equations expressing the relations between the overall assessment and sensory descriptors.

The research results are important for marketing practice. In particular, during the development of new juices and drinks or their modification, the attention can be paid to only a few sensory descriptors, like specific taste, clarity and sweet taste, which mostly influence the overall assessment of particular products. Another descriptors, like sour taste or flavor, are of minor importance and may not be taken into account, thus decreasing the cost of sensory studies.

Even if these studies have been made only among Polish students and only for fruit juices, the concluded are universal and may be valid for whole populations and another food products.

Bibliography

- Assiouras I., Liapati G., Kouletsis G., Koniordos, M. (2015), *The impact of brand authenticity on brand attachment in the food industry*, "Brit. Food J.", Vol. 117, No. 2.
- Beneke J., Trappler E. (2015), *The might of the brand: A comparative analysis of brand prevalence in an emerging market setting*, "Brit. Food J.", Vol. 117, No. 2.
- Bower J.A., Turner L. (2001), *Effect of liking, brand name and price on purchase intention for branded, own label and economy line crisp snack foods*, "J. Sens. Stud.", Vol. 16, No. 1.
- Breneiser J.E., Allen S.N. (2011), *Taste preference for brand name versus store brand sodas*, "North Amer. J. Psychol.", Vol. 13, No. 2.
- Calvo Porral C., Lang F. (2015), *Private labels: The role of manufacturer identification, brand loyalty and image on purchase intention*, "Brit. Food J.", Vol. 117, No. 2.
- Cavanagh K.V., Forestell C.A. (2013), *The effect of brand names on flavor perception and consumption in restrained and unrestrained eaters*, "Food Qual. Prefer.", Vol. 28, No. 2.
- Cavanagh K.V., Kruja B., Forestell C.A. (2014), *The effect of brand and caloric information on flavor perception and food consumption in restrained and unrestrained eaters*, "Appetite", No. 82.
- Connell P.M., Mayor L.F. (2013), *Activating health goals reduces (increases) hedonic evaluation of food brands for people who harbor highly positive (negative) affect toward them*, "Appetite", No. 65.
- De Pelsmaecker S., Schoutete J., Gellynck X. (2013), *The consumption of flavored milk among a children population. The influence of beliefs and the association of brands with emotions*, "Appetite", No. 71.
- Di Monaco R., Cavella S., Di Marzo S., Masi P. (2004), *The effect of expectations generated by brand name on the acceptability of dried semolina pasta*, "Food Qual. Prefer.", Vol. 15, No. 5.
- Eldesouky A., Pulido A.F., Mesias F.J. (2015), *The role of packaging and presentation format in consumers' preferences for food: an application of projective techniques*, "J. Sensory Stud.", No. 30.
- Gacula Jr. M.C., Rutenbeck S.K., Campbell J.F., Giovanni M.E., Gardz, C.A., Washam I.R.W. (1986), *Some sources of bias in consumer testing*, "J. Sensory Stud.", No. 1.

- Garber Jr. L.L., Hyatt E.M., Starr R.G. (2003), *Measuring consumer response to food products*, "Food Qual. Prefer.", Vol. 14, No. 1.
- Hilgenkamp H., Shanteau J. (2010), *Functional measurement analysis of brand equity: Does brand name affect perceptions of quality?*, "Psychologica", No. 31.
- Hultén B., Broweus M., Van Dijk D. (2009), *What is sensory marketing?*, (in:) *Sensory marketing*, Palgrave Macmillan, London.
- Hultén B. (2011), *Sensory marketing: the multi-sensory brand experience concept*, "Eur. Buss. Rev.", Vol. 26, No. 3.
- Keller L. (1998), *Branding perspectives on social marketing*, "Adv. Consum. Res.", No. 25.
- Kim M.K., Lopetcharat K., Drake M.A. (2013), *Influence of packaging information on consumer liking of chocolate milk*, "J. Dairy Sci.", Vol. 96, No. 8.
- Krishna A. (2010), *Sensory marketing. Research on sensuality of products*, Taylor and Francis Group, LLC, New York.
- Lalit M.K., Paramieet G. (2013), *Purchase of branded commodity food products: empirical evidence from India*, "Brit. Food J.", Vol. 115, No. 9.
- Lawless L.J.R., Drichoutis A.C., Naykaga Jr R.M., Threlfall R.T., Meullenet J.F. (2015), *Identifying product attributes and consumer attitudes that impact willingness to pay for a nutraceutical-rich juice product*, "J. Sensory Stud.", No. 30.
- Moskowitz H., Hartmann J. (2009), *Consumers research: creating a solid base for innovative strategies*, "Trends Food Sci. Techn.", No. 19.
- Olsen N.V., Menichelli E., Meyer C., Naesa T. (2011), *Consumers liking of private labels. An evaluation of intrinsic and extrinsic orange juice cues*, "Appetite", Vol. 56, No. 3.
- Robinson T.N., Borzekowski D.L., Matheson D.M., Kraemer H.C. (2007), *Effects of fast food branding on young children's taste preferences*, "Arch. Pediatr. Adolesc. Med.", No. 161.
- Rubio N., Villaseño, N., Oubiña J. (2014), *Value and store brand identification in food products*, "Brit. Food J.", Vol. 116.
- Sosa M., Hough G. (2006), *Sensory expectations of children from different household incomes for a branded confectionary product*, "J. Sensory Stud.", No. 21.
- Taghavi M.-S., Seyedsalehi A. (2015), *The effect of packaging and brand on children's and parents' purchasing decisions and the moderating role of pester power*, "Brit. Food J.", Vol. 117, No. 8.
- Torres-Moreno M., Tarrega A., Torrecasana E., Blanch C. (2012), *Influence of label information on dark chocolate acceptability*, "Appetite", Vol. 58, No. 2.
- Tuorila H., Monteleone E. (2009), *Sensory food science in the changing society: Opportunities, needs, and challenges*, "Trends Food Sci. Techn.", Vol. 20, No. 2.
- Varela P., Ares G., Gimenez A., Gambaro A. (2010), *Influence of brand information on consumers' expectations and liking of powdered drinks in central location tests*, "Food Qual. Prefer.", Vol. 21, No. 7.
- Vidal L., Barreiro C., Gomez B., Ares G., Gimenez A. (2013), *Influence of information on consumers' evaluations using check-all-that-apply questions and sorting: a case study with milk desserts*, "J. Sens. Stud.", No. 28.
- Zaltman G., Zaltman L.H. (2008), *Marketing Metaphoria: What Deep Metaphors Reveal about the Minds of Consumers*, Harvard Bussiness Press, Boston.

Wpływ znajomości marki na sensoryczne postrzeżenie soków owocowych

Streszczenie

Celem badań było określenie wpływu znajomości marki na ocenę sensoryczną wybranych soków owocowych. Siedem marek soków zostało wybranych na podstawie badania przeprowadzonego wśród respondentów w wieku 19-25 lat w Gdyni. Wytrenowani ewaluatorzy, studenci Akademii Morskiej w Gdyni, wykonali badania sensoryczne soków pomarańczowych, jabłkowych i z czarnych porzeczek dla każdej z marek, w warunkach znajomości producenta i bez niej. Ocena sensoryczna soku i czynniki sensoryczne zostały określone w skali od 1 do 10. Stwierdzono istotny wpływ znajomości marki na odczucia sensoryczne, pozytywny dla soków najbardziej popularnych i negatywny dla mniej popularnych. Najważniejszymi deskryptorami sensorycznymi były specyficzny smak, przejrzystość i słodki smak. Sformułowano równanie regresji wiążące ocenę soku z ważkością deskryptorów. Otrzymane wyniki mają znaczenie dla marketingu sensorycznego i dla producentów żywności.

Słowa kluczowe: znajomość marki, badania sensoryczne, soki owocowe.

Kody JEL: D84, R31, Q13

Влияние знания бренда на сенсорное восприятие фруктовых соков

Резюме

Цель изучения заключалась в определении влияния знания бренда на сенсорную оценку избранных фруктовых соков. Семь брендов соков избрали на основе опроса, проведенного среди респондентов в возрасте 19-25 лет в Гдыне. Подготовленные оценщики, студенты Морской академии в Гдыне, провели сенсорные обследования соков из апельсинов, яблок и черной смородины для каждого из брендов, в условиях знания производителя и без него. Сенсорная оценка сока и сенсорные факторы определили по шкале от 1 до 10. Выявили существенное влияние знания бренда на сенсорные восприятия – положительное для самых популярных соков и отрицательное для менее популярных. Самыми важными сенсорными дескрипторами были: специфический вкус, прозрачность и сладость. Составили уравнение регрессии, увязывающее оценку сока с весомостью дескрипторов. Полученные результаты имеют значение для сенсорного маркетинга и для производителей продуктов питания.

Ключевые слова: знание бренда, сенсорное изучение, фруктовые соки.

Коды JEL: D84, R31, Q13

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