The Source of Protein or Its Value? Consumer Perception Regarding the Importance of Meat(-like) Product Attributes

Marcin Adam Antoniak 1,*, Andrzej Szymkowiak 1 and Benedykt Pepliński 2

1 Department of Commerce and Marketing, Institute of Marketing, Poznan University of Economics and Business, ul. Niepodleglosci 10, 61-875 Poznan, Poland; andrzej.szymkowiak@ue.poznan.pl
2 Department of Economics, Poznan University of Life Sciences, ul. Wojska Polskiego 28, 60-637 Poznan, Poland; benedykt.peplinski@up.poznan.pl
* Correspondence: marcin.antoniak@phd.ue.poznan.pl; Tel.: +48-61-856-90

Abstract: Food product attributes may significantly influence the general perception of the product itself, as well as the willingness for its consumption. Assessment of the product is based on customers’ beliefs and individual preferences. Because meat-like products are presented as meat substitutes providing sufficient protein values, the present study aimed to determine the effect of protein source and labelling pointing at high protein content on the evaluation of the product. The experimental online study was conducted with a group of 552 respondents. Four versions of product packaging were designed and tested. These packages differed in the presence or absence of the Nutrition Claim and the presence of the text indicating the vegetable or meat origin of the product. Data collected in the experiment were analyzed using a 2 × 2 ANOVA. The study revealed that the source of protein (plant vs. animal) appears to shape consumers’ perception of the product as more eco-friendly (F (1.518) = 38.681, p < 0.001, η² = 0.069), natural (F (1.518) = 15.518, p < 0.001, η² = 0.029), and healthy (F (1.518) = 25.761, p < 0.001, η² = 0.047). Moreover, labelling including a “high-protein” Nutrition Claim increases the willingness to consume the product (F (1.518) = 4.531, p = 0.034, η² = 0.009), and provides the impression of it being more eco-friendly (F (1.518) = 6.658, p = 0.01, η² = 0.012) and of a higher quality (F (1.518) = 7.227, p = 0.007, η² = 0.014). The obtained results may have theoretical significance by improving the understanding of factors determining the perception of food products and the use of meat substitutes.

Keywords: consumer perception; meat alternatives; proteins; nutrition claims

1. Introduction

Being omnivorous organisms, humans require a lot of nutrients in their diets. One of them is proteins and one of their important suppliers is meat. Meat provides significant amounts of minerals (sodium, magnesium, potassium, and calcium) and vitamins (A, B6, B12, and D) [1]. However, due to the continued population growth, as well as for health, environmental, and animal welfare reasons, many scientists believe that meat reduction is crucial for more sustainable food production [2]. Additionally, replacing meat with its analogues [3] or alternative sources of proteins is a promising strategy to reduce meat consumption. There are several alternative sources of protein to meet its required consumption level, including plants, cell-based manufacturing, insects [4], algae, bacteria, or fungi. However, despite the development of alternative sources, their market share remains low [5], although not all [6], but still many, are considered healthier and more environmentally friendly than proteins derived from animal slaughter [7].

Nonetheless, many meat consumers, especially in western societies, are reluctant to switch to a plant-based diet [8] or reduce meat consumption [3]. In fact, texture, flavor, and aroma of meat products evoke a special eating experience, while a vegetarian diet is simply not able to fully simulate it [9]. Overall, unfamiliarity and lower sensory appeal [10],

Applied Sciences, 2022, 12, 4128. https://doi.org/10.3390/app12094128
convenience [11], environmental benefits [12,13], and food appearance [14] have been identified as important barriers in the consumption of meat alternatives. Inconvenience-related barriers, such as difficulty in preparing tasty vegetarian food and limited options at restaurants, also discourage people from switching to plant-based options [15]. Another reason is well-established eating habits [16]. What is more, information barriers also prevent consumers from gaining knowledge on the benefits of plant-based diets [16]. Furthermore, many people believe that meat is an essential and irreplaceable source of energy, while a plant-based diet may be viewed as insufficiently nutritious [17]. Negative opinions of meat analogues are also visible in the case of plant-origin foods, which are the most popular substitutes for meat. The reluctance of consumers to make this dietary change due to the pleasure derived from eating conventional meat, nutritional and sensory attractiveness, as well as the convenience that meat offers is among these barriers [2,18]. Therefore, switching to a plant-based diet, and as such, to plant-based products, is generally considered unpopular [19].

The aim of this study is to define what is more important to consumers—the fact that the product contains a high level of protein, that it is a source of protein (meat vs. plants), or both. Understanding these relationships and, in particular, determining the meaning of the descriptions placed on the front-of-pack (FOP) label—referring to the protein source and its value as a kind of trigger affecting product evaluation, is the main contribution of this work. Therefore, the structure of the following part of this article is as follows. A literature review is shown in the subsequent part of the manuscript. Next, the research methods and results are presented. Finally, the discussion and contributions, including the strengths and weaknesses of this article, are provided.

It is argued that there are many positive aspects connected with meat analogues such as ease of preparation, health benefits, and also palatability [20]. However, whether consumers are willing to buy a particular meat product or its alternative depends on many factors. The way consumers perceive products is important. Nevertheless, perceptions may be focused on different product characteristics or specific attributes such as those “ecological” [21], “natural” [22], “product appearance” [23], “healthy” [24], and may result in different propensity of consuming the selected product.

From a product perspective, properties such as visual appearance, texture, and flavor are of primary importance in establishing consumer sensory and hedonic responses [23]. Such responses are mediated by consumer-related physiological and psychological factors, as well as socially and culturally acquired expectations. It appears that plant-based meat alternatives are more accepted than other non-traditional meat-based proteins, including insects or cultured meat [25,26]. Interestingly, plant-based meat alternatives are also estimated to have higher sustainability potential compared to other alternative proteins [27]. However, consumers with high levels of meat consumption are more receptive to cultured meat [25] and meat alternatives that look similar to meat [10]. It also seems that health motivations are more relevant to the acceptance of plant-based proteins, while environmentally related motivations are more closely linked to their consumption [25].

When studying the topic of plant-based proteins, not only should a human’s desire to eat them be taken into account, but also the way they are perceived. As already mentioned, these perceptions may vary with regard to characteristics such as environmental friendliness, naturalness, appearance, quality, or health benefits, but also within the context of Nutrition Claims being present on the packaging. Consumers play a vital role in assuming their part as more responsible citizens who want to balance hedonic consumption with long-term sustainable behaviors such as reduced meat consumption [28]. Additionally, as shown by Nisbet et al. [29], the relationship towards nature and the environment, as well as the ecological benefits of vegetarian diets, may encourage commitment to vegetarianism and ecology [28] through the consumption of plant-based proteins. In addition, people value environmentally friendly consumption as it represents their commitment to a healthy lifestyle [30]. In a study conducted by McKinsey in 2007 among consumers from eight of the world’s largest economies, it was shown that 87% of consumers are concerned about
the environmental and social impact of the products they buy [21]. However, while many people want to choose foods that are more environmentally friendly, they often struggle with deeply rooted habits or strong social influences. Consequently, their intentions do not translate into changes in their behavior [31]. Moreover, although consumers recognize the moral aspects of using environmentally friendly products, they lack the will to buy them [32].

The results of the Nielsen Global Health and Wellness Survey [33], conducted in 60 countries and involving 30,000 consumers, indicate that the most desirable food features are freshness, naturalness, and minimal processing. The naturalness of food may be treated as a perception [34] and various aspects contribute to its development among consumers. Perceived naturalness is a heuristic attribute that consumers may assume as a positive indicator of food quality [35]. Lack of naturalness is perceived as having negative impact on the environment and human health [36]. Aspects often attributed with natural foods are health, palatability, freshness, and the above-mentioned environmental friendliness [22]. It seems that food processing is perceived as detrimental to naturalness [37]. Thus, the more food is processed, the less it is considered natural. It may, for example, concern plant-based foods, which may be much more processed than meat. In addition, invasive technologies such as irradiation and pasteurization also decrease the perception of food naturalness [38].

When consumers choose a particular food, their preferences are based on several sensory (taste and texture) and extra-sensory characteristics (health, religion, ethics, etc.) [39]. The extra-sensory ones are fundamental values that perceived quality seeks to capture and develop. Its perception is the result of the interaction between consumers’ conceptual perception and their subjective assessment of the quality of a food product in a particular situation [40]. Glitsch [41] argues that quality, combined with other sensory factors such as appearance, texture, or taste, are those most importantly characterizing a product. There is general agreement that quality has both an objective and subjective dimension [42]. The objective one refers to the physical aspect of a product. Subjective quality is the one perceived by consumers [42]. Quality may be related to freshness, food safety, nutritional characteristics, and value [39], whereas nutrition characteristics are directly related to health and the perception of a product as healthy or unhealthy.

According to various studies, consumers perceive food in terms of being healthy or unhealthy [24]. This may be due to how they understand the products and what they expect from them [43]. In addition, many people argue that food healthiness is very important in their food choices [44]. In the literature, the positive relationship is emphasized between the interest in nutritional information and healthy diet awareness. Indeed, consumers who see a link between food choices and health, and those who consider diet an important part of their lifestyle, are more likely to benefit from the nutritional and health-related information available on products [45]. In this case, increased consumption of plant-based foods is generally considered healthy [46]. Additionally, in various studies, it has been confirmed that a plant-based diet, which should be considered healthy, brings numerous benefits in terms of improving personal health, such as reducing the risk of obesity, diabetes, heart disease, certain types of cancer, improved life longevity [47,48] and finally, reduced death rates [49]. Moreover, in studies, it has been found that plant-based diets help increase eudemonic well-being and life satisfaction, i.e., they positively improve psychological health [50].

Taking all these facts into consideration, the authors’ aim was to analyze the consumers’ nutritional choices depending on protein source and to take the factors influencing and resulting from the food choices into account. Therefore, the following hypothesis arose:

**Hypothesis 1 (H1).** The source of protein (vegetable vs. animal) differentiates consumers’: (a) willingness to consume food products, (b) perception of products as more eco-friendly, (c) perception of products as more natural, (d) perception of products as being of higher quality, (e) perception of products as more healthy.
To improve the perception of a product as healthy, there are various legal and marketing methods implemented. In research, it has been demonstrated that for most consumers, readily available information such as nutrition labels is the primary source of nutrition information [51], and as such, they have a significant influence on consumer behavior and food purchase choices [52]. Moreover, people concerned with health and nutrition are more likely to seek nutrition information on food labels [53], and they are generally more interested in foods that promise additional benefits [54]. What is more, consumers interested in a healthy diet have a better perception of Nutrition Claims (NC) [55]. Their attitude towards health leads to an increase in the likelihood of purchasing NC-labelled products [55].

While Nutrition Claims are fairly similar around the world, there are some differences in their design and meaning. In the USA, they describe “the level of a nutrient, using terms such as free, high, and low, or they compare the level of a nutrient in a food to that of another food, using terms such as more, reduced, and light” [56]. In the European Union, NCs mean “any claim which states, suggests or implies that a food has particular beneficial nutritional properties due to: the energy (calorific value) it provides, provides at a reduced or increased rate or does not provide or the nutrients or other substances it contains, contains in reduced or increased proportions or does not contain” [57]. According to various studies, NCs are commonly used both in Europe and North America [58,59].

Nutrition Claims have been found to influence food perceptions and consumption behavior [60]. Generally, product utility increases with their presence on packaging [61]. It is also argued that the presence of NCs leads to higher food preferences [62]. In addition, in a study conducted among consumers with greater health problems, it was found that food is used more often if it contains a Nutrition Claim [63]. Indeed, these claims may help consumers identify healthier products [64,65]. This means that consumers with a particular interest in health and a healthy diet will more likely be interested in information related to health [66], and thus, also claims, which translates into greater incentives to buy products bearing them [67]. Moreover, products with claims are more often chosen than identical products without them [68]. As a consequence, products containing claims are perceived healthier than those without [60].

As a result, it can be noted that the perceived healthiness of products containing claims may generally affect product assessment [62,69–71]. However, some consumers may react differently to foods containing claims, especially when dealing with products assessed as healthy [62,69] or unhealthy [45,72]. Lähteenmäki [73] found that putting NCs on products considered as healthy may raise questions concerning the reason for supporting food which is already perceived as healthy. Placing an NC on unhealthy foods is preferred by some consumers [74], also being an excuse to reduce guilt [75] and justify the purchase [74]. While claims are important in guiding consumers towards food products [76], there are studies in which their effectiveness is questioned [69]. In addition, nutrition and advertising claims may cause negative effects, such as negative assessment of the healthfulness of food products, taste sensations and ultimately, reduced likelihood of purchasing products bearing NCs in the future [76]. Furthermore, some research argues whether the presence of NCs leads to greater food preferences [62] and perception [77].

Differences in the perception of claims and their impact on the products where they are placed may result from the fact that their very perception determines the assessment and purchase behavior of consumers [69–71]. Unfortunately, there is still no hard data to prove the actual impact of claims on different perceptions of products considered healthy or unhealthy [71]. It is also argued that there is a lack of information on whether front-of-pack labelling (FOP) is equally effective when Nutrition Claims appear or not [78]. Further research on this issue is required.

However, nutrition claims still appear on food packaging very often. They also cover a variety of substances, such as salt, sugar, fat, fiber, vitamins, minerals, and proteins. For proteins, they are heterogeneous complex biomolecules representing one of the major macronutrients in the human diet [79]. They also regulate the activity of cells, muscle tissues and other metabolic processes. Therefore, it is crucial to use a diet rich in various
proteins (plant and animal) because, due to their complementarity, they can provide all
the essential amino acids necessary for the human body [80]. Amino acids are nutrients
important for metabolism and the functioning of the whole organism, growth, development
and health [80].

Due to the aforementioned discrepancies in research on NCs, it is not possible to
show the clear influence of claims on customer perception. With this fact in mind, and
knowing the importance of proteins in the human body, the authors created another set of
hypotheses aimed at analyzing customers’ nutritional choices within the context of using
“high-protein” nutrition claims.

**Hypothesis 2 (H2).** labelling a product with the Nutrition Claim “high protein” differentiates
consumers’: (a) willingness to consume food products, (b) perception of products as more eco-
friendly, (c) perception of products as more natural, (d) perception of products as of higher quality,
(e) perception of products as more healthy.

Moreover, it is assumed that a different combination (protein source and content)
influences the perception of a product. The hypothesis focusing on this relationship is
as follows:

**Hypothesis 3 (H3).** there is an interaction between the labelling of the products as containing a
Nutrition Claim “high protein” and the source of protein origin in the case of consumers’: (a) will-
ingness to consume food products, (b) perception of products as more eco-friendly, (c) perception of
products as more natural, (d) perception of products as of higher quality, (e) perception of products
as more healthy.

2. Materials and Methods

For the purposes of experimental research, 4 versions of product packaging were
prepared, which differed in the information presented on the front label: source of origin
(plant- vs. meat-based) and the presence of health claims (high protein content vs. no such
labelling). In order to maintain psychological realism and take the potential limitations
presented in the literature review into account, meat patties were used as the examined
product. On the basis of the prepared visualizations, an online survey was carried out on the
Amazon Mechanical Turk platform among USA citizens who received small remuneration
for taking part in the survey. Research was approved by the Poznan University of Eco-
nomics and Business Committee of Ethical Science Research conducted with participation
of humans—resolution number 13/2020, 27 December 2020. Participants were randomly
assigned to one of 4 groups. During the study, after seeing a randomly selected 1 of the
4 versions of the product packaging (Figure 1), the participants provided their answers
on a 7-point single-item scale (1—“I strongly disagree”, 7—“I strongly agree”) regarding:
willingness to consume and assessment of the perception concerning the following product
attributes: environmentally friendly, natural, high quality, healthy (Appendix A Table A1).
Apart from questions related to the product, the participants provided answers about
their socio-demographic situation. Additionally, in the trial, questions were included that
allowed to check attention, excluding participants who spent less than 3 s observing the
product, which could indicate insufficient familiarization with the product and as such
could also have further impact on the reliability of the obtained results.

Considering the above-mentioned exclusions, 522 respondents were included in the
analysis. The mean age of the respondents ($n = 522$) was 38 years ($SD = 12.05$, min = 19,
max = 74). The group was dominated by men (54.78%). The most frequently declared
level of education was bachelor’s (57.66%), followed by master’s (22.31%) and high school
or equivalent (16.28%). Moreover, the group was diversified in terms of reported income
(from below USD 19,000 to above USD 90,000). Within the context of meat consump-
tion, the group included people with low and high levels of declared meat consumption,
however, the majority of people stated their consumption level to be moderate or high
levels (mean = 4.63; SD = 1.59), while the general attitude towards the burgers was higher (mean = 5.24, SD = 1.58).

**Figure 1.** Experimental stimulus.

The data collected in the experiment carried out in 4 groups formed the basis for ANOVA $2 \times 2$ analysis. In order to increase the credibility of the obtained results, bootstrapping was performed ($n = 2000$). Failure to meet the previously described requirements for the respondents’ answers caused the number of participants in each group to be unequal in terms of normative standards, and amounted to: 148, 131, 113, 130 individuals, respectively. Therefore, analysis of $\chi^2$ was performed ($\chi^2 (4, n = 522) = 4.44; p = 0.21$, which allows us to assume that the size of the groups was statistically equal, which is not a barrier for performing parametric analysis. A series of variance analyses was carried out to evaluate the effect of protein source and the “high protein” Nutrition Claim on product characteristics.

### 3. Results

First, the analysis focused on evaluating the willingness to consume. This revealed that the source of the protein turned out to be statistically insignificant ($F (1.518) = 2328, p = ns, \eta^2 = 0.002$), which makes it impossible to confirm hypothesis H1a. However, labelling the product with the “high protein” Nutrition Claim influenced consumption willingness ($F (1.518) = 4.531, p = 0.034, \eta^2 = 0.009$), which confirms hypothesis H2a. In this case, the interaction turned out to be statistically insignificant ($F (1.518) = 0.162, p = ns, \eta^2 = 0.001$), which contradicts hypothesis H3a. Second, the analysis concerned evaluation of individual product attributes. When assessing how environmentally friendly the product is, the results of the analysis indicated that both variables: the origin of the protein ($F (1.518) = 38.681$, $p = ns$, $\eta^2 = 0.009$), $F (1.518) = 38.681$, $p = ns$, $\eta^2 = 0.009$).
$p < 0.001$, $\eta^2 = 0.069$) and the protein-related Nutrition Claim ($F (1.518) = 6.658$, $p = 0.01$, $\eta^2 = 0.012$), had statistically significant effects on the independent variable, which is in line with Hypotheses H1b and H2b. Generally, plant-based patties were perceived as more environmentally friendly (M = 5.49) than the meat-based ones (M = 4.64). Nonetheless, in this case, the interaction turned out to be statistically insignificant (H3b). The assessment revealed that the source of protein determines the perception of a product as natural ($F (1.518) = 15.518$, $p < 0.001$, $\eta^2 = 0.029$). Plant-based patties were perceived as more natural (M = 5.33) than the meat-based ones (M = 4.81), which confirms hypothesis H1c. The remaining dependencies were statistically insignificant; thus, it should be concluded that Hypotheses H2c and H3c were not confirmed. The overall product quality perception was only influenced by the protein claim ($F (1.518) = 7.227$, $p = 0.007$, $\eta^2 = 0.014$). Overall, product quality assessment revealed that only the claim affected this variable, confirming the H2d Hypothesis. In other cases, the differences were statistically insignificant, which contradicts Hypotheses H1d and H3d. A similar situation as in the case of H1c, H2c and H3c was noted in the case of evaluating whether the product is perceived as healthy. In this situation, however, the protein source effect was stronger ($F (1.518) = 25.761$, $p < 0.001$, $\eta^2 = 0.047$). Plant-based patties were perceived as more healthy (M = 5.49) than the meat-based ones (M = 4.84), which confirms hypothesis H1e. The remaining dependencies were statistically insignificant, which means that Hypotheses H2e and H3e were not confirmed. All results are presented in Table 1.

Table 1. ANOVA analysis.

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>Degrees of Freedom (df)</th>
<th>Mean Square</th>
<th>Fisher Test (F)</th>
<th>p-Value</th>
<th>Effect Size ($\eta^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Willingness to consume</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based vs. meat product</td>
<td>2.328</td>
<td>1</td>
<td>2.328</td>
<td>0.861</td>
<td>0.354</td>
</tr>
<tr>
<td>“High protein” Nutrition Claim vs. no claim</td>
<td>12.249</td>
<td>1</td>
<td>12.249</td>
<td>4.531</td>
<td>0.034</td>
</tr>
<tr>
<td>Source of protein/claims interaction</td>
<td>0.437</td>
<td>1</td>
<td>0.437</td>
<td>0.162</td>
<td>0.688</td>
</tr>
<tr>
<td>Residuals</td>
<td>1400.272</td>
<td>518</td>
<td>2.703</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environmentally friendly</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based vs. meat product</td>
<td>92.907</td>
<td>1</td>
<td>92.907</td>
<td>38.681</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>“High protein” Nutrition Claim vs. no claim</td>
<td>15.993</td>
<td>1</td>
<td>15.993</td>
<td>6.658</td>
<td>0.010</td>
</tr>
<tr>
<td>Source of protein/claims interaction</td>
<td>0.056</td>
<td>1</td>
<td>0.056</td>
<td>0.024</td>
<td>0.878</td>
</tr>
<tr>
<td>Residuals</td>
<td>1244.159</td>
<td>518</td>
<td>2.402</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Natural</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based vs. meat product</td>
<td>34.604</td>
<td>1</td>
<td>34.604</td>
<td>15.518</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>“High protein” Nutrition Claim vs. no claim</td>
<td>5.299</td>
<td>1</td>
<td>5.299</td>
<td>2.376</td>
<td>0.124</td>
</tr>
<tr>
<td>Source of protein/claims interaction</td>
<td>0.431</td>
<td>1</td>
<td>0.431</td>
<td>0.193</td>
<td>0.660</td>
</tr>
<tr>
<td>Residuals</td>
<td>1155.094</td>
<td>518</td>
<td>2.230</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High quality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based vs. meat product</td>
<td>2.701</td>
<td>1</td>
<td>2.701</td>
<td>1.643</td>
<td>0.200</td>
</tr>
<tr>
<td>“High protein” Nutrition Claim vs. no claim</td>
<td>11.875</td>
<td>1</td>
<td>11.875</td>
<td>7.227</td>
<td>0.007</td>
</tr>
<tr>
<td>Source of protein/claims interaction</td>
<td>0.161</td>
<td>1</td>
<td>0.161</td>
<td>0.098</td>
<td>0.754</td>
</tr>
<tr>
<td>Residuals</td>
<td>851.204</td>
<td>518</td>
<td>1.643</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1. Cont.

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>Degrees of Freedom (df)</th>
<th>Mean Square</th>
<th>Fisher Test (F)</th>
<th>p-Value</th>
<th>Effect Size (η²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based vs. meat product</td>
<td>54.097</td>
<td>1</td>
<td>54.097</td>
<td>25.761</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>“High protein” Nutrition Claim vs. no claim</td>
<td>6.472</td>
<td>1</td>
<td>6.472</td>
<td>3.082</td>
<td>0.080</td>
</tr>
<tr>
<td>Source of protein/claims interaction</td>
<td>1.030</td>
<td>1</td>
<td>1.030</td>
<td>0.491</td>
<td>0.484</td>
</tr>
<tr>
<td>Residuals</td>
<td>1087.775</td>
<td>518</td>
<td>2.100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Discussion

In this study, it was aimed to determine consumer perception of the importance of chosen product characteristics. The research has improved our understanding of how factors such as the source of protein (meat vs. plant) and the labelling of a product with “high protein” Nutrition Claims affect consumers. The conclusions of the study indicate that both factors are significant for consumers, however, not in all studied areas.

Unlike meat patties, plant-based ones are associated with more healthy and environmentally friendly choices, which may be due to the assessment of meat being potentially risky for health [31,49] and harmful to the environment [81,82]. Criticism of meat consumption takes different forms depending on a region’s history of environmental awareness [83] and culinary traditions [84]. In poorer regions, such as the southern and eastern parts of the European Union, the need to replace meat products with plant-based products is less often considered [85], which may result from the perception of meat as a luxury good. Protein’s origin also determines the perception of the product as natural, which is considered one of the key features of food [33] and which is in accordance with the results obtained by Tonsor, Lusk, and Schroeder [86].

The choices made also involve perceptions of whether a product has “light” or “deep” environmental elements and the amount of tradeoffs involved in that choice [85]. In the case of food containing more proteins, it can be viewed as more “effective”, meaning that consuming a smaller portion will provide the body with the nutrients it needs. The “high protein” Nutrition Claim increases the perceived environmental friendliness of protein content for both plant-based and meat-based products. Nonetheless, the strength of the effect is marginal. Despite the suggested differences in the quality perception of meat and its substitutes [10] but partly in accordance with Schouteten et al. [87], protein source does not significantly affect the perceived quality of a product, which can also be interpreted so that for products that were intended to be meat, the use of substitutes does not mean a reduction in their quality. However, this should be analyzed within a broader context, for example, with regard to purchasing decisions. The willingness to consume a product is the result of evaluating all its attributes. The study did not allow us to reveal that an alternative source of protein for meat-like products adversely affected consumption willingness, which contradicts earlier studies with a low acceptance of such products [10,16,88]. This may indicate that consumer attitudes towards this type of product are improving. It also shows that factors such as naturalness, environmental friendliness, and healthiness, against which the plant-based product was perceived to be superior, were not decisive in making consumption decisions. This is consistent with previous research, in which it was shown that while the pro-ecological awareness of consumers is increasing, this does not always have a direct impact on their behavior [31,32].

The authors are aware of certain research limitations, which may also be eliminated in future studies. The conducted inter-group study was aimed at identifying the influence of the analyzed factors under ceteris paribus conditions. Such research is declarative and deliberately minimizes the number of variables. The factors that have been omitted and could be an element of subsequent research are either the dependent or independent
variable, e.g., the price of a product. Another factor that may affect the results is the selection of North American respondents. It would be worthwhile to conduct similar studies in countries with less meat consumption and different consumer environmental sensitivity. In addition, it is worth considering the level of food neophobia as a moderator, which may affect the overall assessment of products that are just only now becoming popular among consumers.

5. Conclusions

The obtained results provide a better understanding of factors determining the perception of food products and the use of meat substitutes. The study revealed how perception of products is influenced by protein claims, the presence of which can have a positive impact on consumer decisions. The study, based on the authors’ article and results, may also further allow elaborating on the topic of food labels and the meaning of various information they may, or even should, contain, and further, how this influences consumer perception. Moreover, the research results may be an important source of information for business practitioners, showing that for the tested products, the source of protein is of little importance for consumers. As for managers, knowledge of the significance of labels, their content, as well as the attitude of customers towards various products and their characteristics, may result in designing better labels and therefore, in better consumer perception of the products on which they are placed. This is especially important in competitive food markets, where labels and packaging are often the most important factors differentiating products from each other.

Author Contributions: Conceptualization, M.A.A., A.S. and B.P.; methodology, M.A.A.; software, M.A.A.; validation, A.S.; formal analysis, M.A.A.; investigation, A.S., B.P. and M.A.A.; resources, A.S., B.P. and M.A.A.; writing—original draft preparation, M.A.A.; writing review and editing, A.S. and B.P.; visualization, A.S. and B.P.; supervision, A.S.; project administration, M.A.A.; funding acquisition, B.P., M.A.A. and A.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Non applicable.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data are contained within the article.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statement</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy</td>
<td>The product shown in the picture is healthy for me</td>
<td>[43]</td>
</tr>
<tr>
<td>Natural</td>
<td>The product shown in the picture is natural</td>
<td>[43,89]</td>
</tr>
<tr>
<td>Environmentally friendly</td>
<td>The product shown in the picture is environmentally friendly</td>
<td>[90,91]</td>
</tr>
<tr>
<td>High quality</td>
<td>The product shown in the picture is of a high quality</td>
<td>[92]</td>
</tr>
<tr>
<td>Willingness to consume</td>
<td>What is your willingness to consume the product shown in the picture</td>
<td>[93]</td>
</tr>
</tbody>
</table>
References


5. Gravelly, E.; Fraser, E. Transitions on the shopping floor: Investigating the role of Canadian supermarkets in alternative protein consumption. Appetite 2018, 130, 146–156. [CrossRef]


12. Weinrich, R.; Elshiewy, O. Preference and willingness to pay for meat substitutes based on micro-algae. Appetite 2019, 142, 104533. [CrossRef]

13. Kornher, L.; Schellhorn, M.; Vetter, S. Disgusting or Innovative-Consumer Willingness to Pay for Insect Based Burger Patties in Germany. Sustainability 2019, 11, 1878. [CrossRef]


18. Corrin, T.; Papadopoulos, A. Understanding the attitudes and perceptions of vegetarian and plant-based diets to shape future health promotion programs. Appetite 2017, 109, 40–47. [CrossRef]

19. Graça, J.; Oliveira, A.; Calheiros, M.M. Meat, beyond the plate. Data-driven hypotheses for understanding consumer will-ingness to adopt a more plant-based diet. Appetite 2015, 90, 80–90. [CrossRef]


38. Abouab, N.; Gomez, P. Human contact imagined during the production process increases food naturalness perceptions. Appetite 2015, 91, 273–277. [CrossRef]
43. Lähteenmäki, L.; Lampila, P.; Grunert, K.G.; Boztug, Y.; Ueland, Ø.; Åström, A.; Martinsdóttir, E. Impact of health-related claims on the perception of other product attributes. Food Policy 2010, 35, 230–239. [CrossRef]


93. Dupont, J.; Fiebelkorn, F. Attitudes and acceptance of young people toward the consumption of insects and cultured meat in Germany. *Food Qual. Prefer.* **2020**, *85*, 103983. [CrossRef]