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Consumer expectations regarding the labelling of products containing cultured meat[1]

Oczekiwania konsumentów wobec etykietowania produktów zawierających mięso *in vitro*

Abstract

Food labels are an important factor in determining purchases. The aim of the study was to discover consumer expectations regarding the labelling of products containing cultured meat. A comparative analysis was conducted on 1,286 consumers, taking food technology neophobia, customer innovativeness and health consciousness into account. The analysis is based on a series of Repeated Measures ANOVAs, which has made it possible to identify individual differences among consumers. We found a significant variation in terms of a level with which consumers formulate their judgment concerning the information that should appear on the packaging. We identified three groups of variables with different levels of expectation, where *in-vitro* is not the leading one. The results indicate that the placement of information about cultured meat on food labels may have a negative stigmatizing effect.

Keywords
cell-based meat, labelling, consumer expectancy, food technology neophobia, health consciousness

Streszczenie

Etykiety żywnościowe są ważnym czynnikiem determinującym zakupy. Celem badania było poznanie oczekiwań konsumentów w zakresie etykietowania produktów zawierających mięso in vitro. Analizie porównawczej poddano 1286 konsumentów, biorąc pod uwagę neofobię technologii żywności, innowacyjność konsumentów oraz ich świadomość zdrowotną. Analiza opiera się na serii ANOVA z powtarzanymi pomiarami, co pozwoliło zidentyfikować indywidualne różnice między konsumentami. Stwierdziliśmy istotne zróżnicowanie poziomu, na jakim konsumenci formułują swoje opinie na temat informacji, które powinny znaleźć się na opakowaniach. Zidentyfikowaliśmy trzy grupy zmiennych o różnych poziomach oczekiwań względem nich, przy czym *in vitro* okazało się nie być zmienną wiodącą. Wyniki wskazują, że umieszczanie na etykietach żywności informacji o mięsie *in vitro* może mieć negatywny efekt stygmatyzujący.

Słowa kluczowe
mięso *in vitro*, etykietowanie, oczekiwania konsumentów, neofobia technologii żywności, świadomość zdrowotna

JEL: D10, D91, I12, M31, M38

Introduction

The rapid growth of the human population has many serious consequences. One of them is the growing consumption of animal protein, which will constantly increase in the nearest future (Singh et al., 2019). In order to adapt to the high demand for meat, animal husbandry has increased accordingly (Ritchie & Roser, 2019). However, this trend cannot continue indefinitely. Moreover, animal husbandry has negative environmental consequences, and the awareness regarding this keeps increasing (Martin et al., 2015; Petrovic et al., 2015). This raises moral and ethical controversies related to animal welfare. Notwithstanding, in some countries, awareness of social, environmental and ethical issues related to traditional meat farming is increasing, giving the opportunity to raise interest in developing other forms of protein harvest (Martin et al., 2015; Petrovic et al., 2015). One of the solutions seems to be the production of cell-based meat (CBM). According to Wilks and Phillips (2017), as much as 65.3% of respondents would be willing to use this technology, while 31.5% would eat cultured meat as a replacement for traditional ones.

The commercial success of cultured meat seems to be heavily dependent on consumer perception (Bryant & Barnett, 2018), which is mainly related to animal welfare and environmental sustain-abin vitroility – and less frequently to food security or safety (Bekker et al., 2017; Laestadius, 2015). Therefore, it is very important to provide adequate funds for the development of technology itself, but also for increasing product perception through focusing on marketing activities, lobbying or strengthening positive associations between consumers and the product itself. This is because providing the information, as shown in some empirical analyses, is essential to increase consumer acceptance (Bryant et al., 2019; Wilks & Phillips, 2017). Major changes on the meat market and the potential to increase the demand for meat substitutes are an opportunity for start-ups and innovators, but the market share of such alternatives still remains low (Gravely & Fraser, 2018). However, the largest corporations are already preparing for the future and want to be part of it. As an example, Nestlé is already taking action in cooperation with the Future Meat start-up and is developing meat from cell cultures (Lee et al., 2022). Cargill has invested in Puris, Memphis Meats and Aleph Farms, and is working on new technologies, including cultured meats (Stephens, 2021). Finally, Geltor has raised USD 91.3 million in series B funding to make animal-free collagen, based on cellular agriculture (Geltor, 2020). Shaping attitude toward product can be also done through an appropriate design of food packaging, including the labels themselves. According to Togawa et al. (2019), visual elements of packaging design serve as a powerful, cost-efficient tool for manufacturers and retailers to communicate sensory features of the product. The use of some descriptions such as nutrition or health claims may influence the approach and reactions to products, since they significantly affect perceptions (Gravel et al., 2012; Lähteenmäki et al., 2010). This can be the same with other descriptions – also referring directly to the meat origin. In fact, 70–80% of purchase decisions are made in-store (Bell et al., 2011; Hui et al., 2013), and most of them are made after the shopper examines the product's packaging. Therefore, manufacturers should be careful with various risks, such as having potentially improperly or badly perceived product descriptions on the labels. However, we were unable to find publications that would characterize this topic in relation to cell-based meat in any depth.

There are many names for meat produced in laboratories. The most popular are "synthetic" (Marcu et al., 2015), "artificial" (Bonny et al., 2017), "*in vitro*" (Bhat et al., 2017), "laboratory" or "laboratory grown" (Galusky, 2014; Hopkins & Dacey, 2008), "cultivated" (The Good Food Institute, 2019), "clean" (Stephens et al., 2018), "cultured" (Bogueva & Marinova, 2020; Choudhury et al., 2020) or "cell-based" (Faustman et al., 2020; Heidemann et al., 2020). Using the correct one may have very far-reaching consequences. Using names such as "synthetic" or "lab-grown" meat appears unacceptable due to their affiliations with something artificial (Bryant & Barnett, 2019). Various information put on the label, as in the case of food claims, may also cause perception of products to be blander (Benson et al., 2019) and less palatable (Choi & Reid, 2018; Suzuki & Park, 2018). A similar case may be associated with cultured-meat based products. To change this, the packaging, or, more precisely, the label, should contain information on intrinsic and positive characteristics. This information would have to be combined with different approaches to further strengthen consumer perception and acceptance (Mancini & Antonioli, 2020). Finally, Siegrist et al. (Siegrist et al., 2018) and Bryant and Dillard (2019) reported a significantly higher rate of acceptance when participants are given a non-technical description, which is just easier to understand. However, further research is needed on this topic in the context of cell-based meat and products containing it.

Despite a growing interest in cultured meat products, the legislation of many countries is not yet prepared adequately for the appearance of this type of product, as the product and technology it concerns are still new and developing. However, due to the emergence of animal protein alternatives, and due to the growing interest in

this topic, the labelling of products containing animal protein alternatives, including cultured meat, is becoming a matter of interest. Nevertheless, as this topic is relatively little known, to the best of our knowledge, there are no publications that deal with the subject of cultured meat packaging and consumer expectations towards its labels. Therefore, our aim was to answer the question of what consumers expect from the labelling of products containing farmed meat. Moreover, we wanted to discover such expectations, taking into account the level of consumer health awareness and innovativeness. As a result, we have decided to create a publication that will be the first to analyse expectations regarding various label elements, such as: information on GMOs along with the one on cultured meat.

The contribution of this study is twofold. Firstly, consumer expectations are defined concerning the appearance of various information on the label of products containing cultured meat. Secondly, our research is compared with global environmental and animal welfare goals and opportunities for the sustainable production and consumption of cultured meat.

Method

In order to assess consumer expectations regarding CBM labelling, a comparative analysis with other elements published on the packaging of food products was conducted. The study was conducted based on the CAWI method using the Amazon Mechanical Turk Internet platform – an online application used to integrate human intelligence into remote procedure calls. In the study, respondents were to determine to what degree they expect the following information should appear on processed meat packaging (1 – 'non-obligatory', 7 – 'obligatory'). In addition, eight components that are an important part of food labels were tested: ingredients containing Genetically Modified Organisms (GMO), list of ingredients (ING), list of allergens (ALL), % of covering daily reference values (DRV), information about the usage of cultured meat (produced using *in vitro* technology) (INV), expiration date (EXP), nutritional value (NUV) preserved through the application of ionizing radiation to food (food irradiation) (IRR). All the indicated elements directly relate to the quality, composition of products and the process of their production. Moreover, all of the above informational components, aside from INV, are required information that has to be provided on the label of food products in the USA and EU. Due to the fact that some elements could be unclear to the consumer, their short characteristics were placed next to each element. Additionally, as part of the questionnaire, they were asked to respond to the statements based on the validated Food Technology Neophobia (FTN) scales – 13 statements based on (Cox & Evans, 2008; Lee et al., 2021; McKenzie et al., 2021) – e.g. "I do not trust new foods", "I am afraid to eat things I have never had before", Customer Innovativeness (CI) – six statements based on (Konuk, 2019) – e.g. "Compared to my friends, I purchase more new food products", "I buy new food products before other people do", and Health Consciousness (HC) – five statements based on the research by (Talwar et al., 2021) – e.g. "I reflect about my health a lot", "I'm usually aware of my health". In order to assess the significance and the possibility of graphical representation on the basis of the collected data, the mean split was made, grouping respondents with high and low levels of FNT, CI and HC.

In order to maximize the credibility of the research, the following three criteria were adopted. The attentions checking questions were used, which allowed to verify randomness of the answers. Next, the surveys in which time to read the task/instruction was less than 3 seconds, were eliminated. This helped to avoid analysing the results of the questionnaires burdened with the problem of participants mechanical transition between the sections. Finally, only the users who had obtained more than 90% of the previous validation for their tasks were allowed to participate in the study. On this basis, 1,286 people out of the 1,564 who participated in the study were included in the stage of data analysis. Only residents of the United States participated in the study. The mean age was 40.4 years (SD = 12, min = 18, max = 89), 51.86% (667 people) were women, 607% (47.2) were men while 12 people did not respond. Moreover, the respondents varied in terms of the size of their household, income, level of education and professional status (Table 1).

Findings

The study included a series of Repeated Measures ANOVAs. This approach has made it possible to identify individual differences for the consumers. The first basic element was to define expectations regarding the presence of each of the eight pieces of information about the product in the entire sample, regardless of the moderators. The analysis revealed that there is a significant variation in terms of a the level with which consumers formulate the judgment that different

Table 1. Frequency tables

Characteristics		Frequency	Percentage	Valid percentage	Cumulative percentage
Size of the household	1	183	14.23	14.23	14.23
	2	256	19.91	19.91	34.14
	3	299	23.25	23.25	57.39
	4	402	31.26	31.26	88.65
	5	105	8.17	8.17	96.81
	More than 5	41	3.19	3.19	100.00
	Total	1286	100.00	x	x
Level of education	Bachelor's degree	716	55.68	55.68	55.68
	Doctorate	29	2.26	2.26	57.93
	High school degree or equivalent	257	19.98	19.98	77.92
	Less than a high school diploma	6	0.47	0.47	78.38
	Master's degree	246	19.13	19.13	97.51
	Other	32	2.49	2.49	100.00
	Total	1286	100.00	x	x
Household income	≤ 19,999	116	9.02	9.02	84.84
	20,000–29,999	144	11.2	11.2	11.2
	30,000–39,999	133	10.34	10.34	21.54
	40,000–49,999	188	14.62	14.62	36.16
	50,000–59,999	220	17.11	17.11	53.27
	60,000–69,999	82	6.38	6.38	59.64
	70,000–79,999	132	10.26	10.26	69.91
	80,000–89,999	76	5.91	5.91	75.82
	≥ 90,000	195	15.16	15.16	100.00
	Total	1286	100.00	x	x
Professional status	Employed full-time	877	68.2	68.2	68.2
	Employed part-time	104	8.09	8.09	76.28
	Retired	59	4.59	4.59	80.87
	Self-employed	104	8.09	8.09	88.96
	Student	29	2.26	2.26	91.21
	Unable to work	24	1.87	1.87	93.08
	Unemployed	89	6.92	6.92	100.00
	Total	1286	100.00	x	x

Source: own elaboration.

information should appear on the packaging ($F(8995, 7) = 47.59$, $p < 0.001$, $\eta^2 = 0.04$). The post-hoc analysis was carried out, allowing to identify three groups of elements with different levels of expectation. The first group concerns EXP ($m = 6.00$, $SD = 1.39$), ING ($m = 5.97$, $SD = 1.26$) and NUV ($m = 5.95$, $SD = 1.23$). All these examples of information were the most expected to appear and there was no statistical difference in expectance values between them (Table 1). The average expectation values were observed for ALL ($m = 5.83$, $SD = 1.41$) and DRV ($m = 5.70$, $SD = 1.32$). The last group was GMO ($m = 5.58$, $SD = 1.56$), INV ($m = 5.551$, $SD = 1.50$) and IRR ($m = 5.55$, $SD = 1.45$). Post-hoc analysis between individual pairs did not reveal any statistically significant differences. The above analyses are available in Table 2.

None of the factors in the third group is directly related to the final product – instead, they are to the process of its preparation and the basic raw material used, in this case – meat. Moreover, the standard deviation for these three elements was the largest among all the elements, which may indicate that such an attitude was conditioned by other factors. For this purpose, detailed analyses were carried out considering Health Consciousness (HC), Customer Innovativeness (CI) and

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Table 2. Post-hoc comparisons

Component 1	Component 2	Mean difference	SE	*t*	Cohen's *d*	p_{holm}
GMO	ING	–0.387	0.040	–9.682	–0.270	<0.001
	ALL	–0.244	0.040	–6.105	–0.170	<0.001
	DRV	–0.114	0.040	–2.858	–0.080	0.030
	INV	0.033	0.040	0.836	0.023	1.000
	EXP	–0.418	0.040	–10.440	–0.291	<0.001
	NUV	–0.364	0.040	–9.099	–0.254	<0.001
	IRR	0.037	0.040	0.914	0.025	1.000
ING	ALL	0.143	0.040	3.577	0.100	0.003
	DRV	0.273	0.040	6.824	0.190	<0.001
	INV	0.421	0.040	10.518	0.293	<0.001
	EXP	–0.030	0.040	–0.758	–0.021	1.000
	NUV	0.023	0.040	0.583	0.016	1.000
	IRR	0.424	0.040	10.596	0.295	<0.001
ALL	DRV	0.130	0.040	3.247	0.091	0.011
	INV	0.278	0.040	6.941	0.194	<0.001
	EXP	–0.173	0.040	–4.336	–0.121	<0.001
	NUV	–0.120	0.040	–2.994	–0.083	0.022
	IRR	0.281	0.040	7.019	0.196	<0.001
DRV	INV	0.148	0.040	3.694	0.103	0.002
	EXP	–0.303	0.040	–7.582	–0.211	<0.001
	NUV	–0.250	0.040	–6.241	–0.174	<0.001
	IRR	0.151	0.040	3.772	0.105	0.002
INV	EXP	–0.451	0.040	–11.276	–0.314	<0.001
	NUV	–0.397	0.040	–9.935	–0.277	<0.001
	IRR	0.003	0.040	0.078	0.002	1.000
EXP	NUV	0.054	0.040	1.342	0.037	1.000
	IRR	0.454	0.040	11.354	0.317	<0.001
NUV	IRR	0.400	0.040	10.013	0.279	<0.001

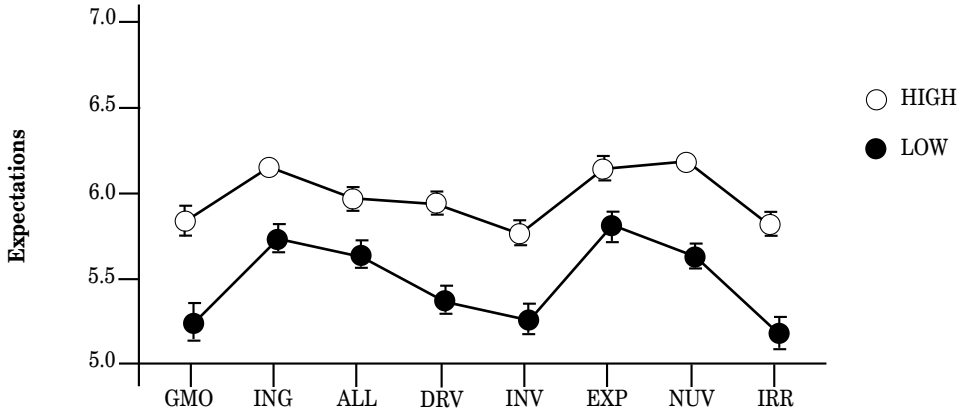
Note: *P*-value adjusted for comparing a family of 28. GMO – ingredients containing Genetically Modified Organisms; ING – list of ingredients; ALL – list of allergens; DRV – % of covering the Daily Reference Values; INV – information about the usage of cultured meat (produced using the *in vitro* technology); EXP – expiration date; NUV – nutritional value; IRR – preserved through the application of ionizing radiation to food (food irradiation).

Source: own elaboration.

Food Technology Neophobia (FTN). In the case of HC, an analysis comparing groups with high and low levels of this factor revealed a statistically significant between the subject effect ($F(1284, 1) = 76.73, p = 0.001, \eta^2 = 0.03$). The mean values for individual groups presented in Figure 1 indicate that in the case of people with a high HC level, their ratio and expectations towards labelling are proportionally higher for each element.

This is related to the situation in which such people generally pay more attention to the selected product and the ranking of elements is analogous for both groups, however, as HC increases, the expectation that they be presented also increases. In the case of CI, a significant statistical relationship was also found between the level of CI and the attitude towards various label elements ($F(1284, 1) = 4.731, p = 0.001, \eta^2 = 0.002$). Moreover, the study revealed an interaction between the CI and the expectation of obtaining different information ($F(8988, 7) = 12.277, p = 0.001, \eta^2 = 0.004$). This indicates that depending on the CI level, the importance of individual elements changed in relation to the group with a different CI level but, at the same time, also in relation to

Figure 1. Influence of Health Consciousness on the expectations of providing information on product label



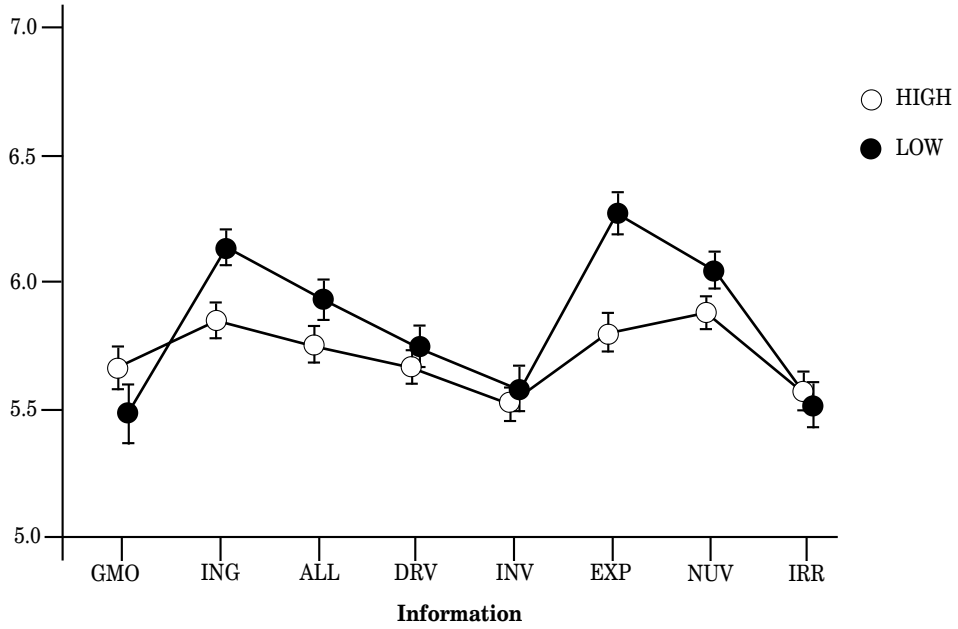
Note: GMO – ingredients containing Genetically Modified Organisms; ING – list of ingredients; ALL – list of allergens; DRV – % of covering the Daily Reference Values; INV – information about the usage of cultured meat (produced using the *in vitro* technology); EXP – expiration date; NUV – nutritional value; IRR – preserved through the application of ionizing radiation to food (food irradiation).

Source: own elaboration.

other elements. The flattening visible in the graph (Figure 2) for the group with a high CI shows the comparable importance of all elements. However, compared to the low CI group, there is a noticeably much lower expectation in relation to the elements from the first (basic) information group, i.e. ING, EXP, where the differences were statistically significant (INGLOW vs. INGLOW: $t(1284) = 3.627$, $p = 0.019$, EXPLOW vs. EXPLOW: $t(1284) = 5.977$, $p < 0.001$). In other cases, the differences were not statistically significant.

The analysis of FTN significance on expectations regarding the labelling of food products revealed, similarly to CI, a between-subject effect ($F(1284, 1) = 15.805$, $p = 0.001$, $\eta^2 = 0.006$) and interaction between the FNT level and various elements ($F(8988, 7) = 7.237$, $p = 0.001$, $\eta^2 = 0.002$) (Figure 3). However, the expectations towards different labelling

Figure 2. Influence of Customer Innovativeness on the expectations of providing information on product label



Note: meaning of abbreviations like in Figure 1.
Source: own elaboration.

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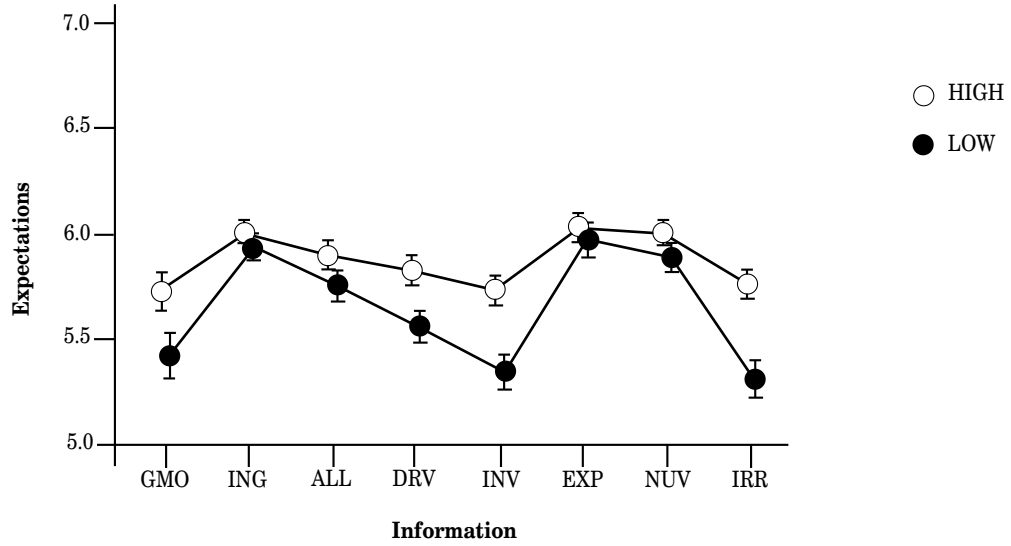
Figure 3. Influence of Food Technology Neophobia on the expectations of providing information on product label



Note: meaning of abbreviations like in Figure 1.

Source: own elaboration.

elements were significantly influenced than in the case of CI. The largest statistically significant differences above 0.3 were noted for GMO ($t(1284) = 3.93$, $p_{holm} = 0.006$), INV ($t(1284) = 5.00$, $p_{holm} < 0.001$), and IRR ($t(1284) = 5.849$, $p_{holm} < 0.001$). This proves that INV, alike GMO and IRR, is perceived in terms of process novelty and not product novelty technologies. In the group of consumers with a high FTN level, the division into three groups, as was the case in the first analysis, is no longer relevant, for the reason that differences between DRV, ALL and INV, GMO and IRR are no longer statistically significant, except for ALL vs. GMO ($t(1284) = 5.026$, $p < 0.001$)). This indicates that the elements related to the use of these technologies are becoming as important as the information about DRV and ALL, and the differences between these elements and EXP, ING as well as NUV have significantly decreased. Nonetheless, in the group with a low FTN level, the elements related to the production process are the least important elements.

Discussion

In recent years, the interest of companies and organizations in meat substitutes has been steadily growing (Gerhardt et al., 2022). There has also been a growing interest of big corporations in CBM. Great resources have already been invested in this technology (Geltor, 2020; Lee et al., 2022; Stephens, 2021), the result of which may be an imminent increase of its supply on the global market. However, the laws of many countries are not yet prepared enough for the emergence of this type of products, because the technology and the businesses based on it are still at a very early stage of development. In addition, the procedures for admission of new products and technologies to the market are complex, costly and time-consuming. On the other hand, such procedures were implemented to protect the consumer against potentially harmful products. Therefore, an important question is what could be the purposefulness and potential consequences for additional labelling requirements of cultured meat-based foods, bearing in mind customers' expectations.

Without a doubt, the producers of CBM should properly design packaging which, as claimed by Togawa et al. (2019), is a powerful and cost-efficient tool to communicate sensory features of the product. The results of our comparative analysis indicate that for consumers, knowledge regarding the use of *in vitro* technology in meat production is not crucial and it is close to the level of expectations regarding the information about irradiation and GMOs. This is a fundamental observation because, so far, consumers may have negative experiences with various new products

and technologies launched in the past, as was the case for GMOs. For example, European citizens seem to be afraid of this technology (European Commission, 2010), although this trend has slightly changed over recent years (European Commission, 2019). Miller and Kerschen (2015) claim that negative consumer attitudes may be caused by local laws, which are often misleading and treat food produced from GMOs as less safe or of lower nutritional value. Somehow, a similar situation appeared in the case of irradiated food as poor communication from food processors and scientists, as well as a deficiency in knowledge about this technology, increased consumer confusion and adverse opinions (Cardello et al., 2007). Extra care should be taken to avoid such problems in relation to CBM. Therefore, due to the potential of this technology, certain actions of producers, scientists and legislators should be taken, yet the optimal form of intervention is still unclear.

As CBM heavily relies on science and technology, providing consumers with clear but also understandable product information may be crucial. Undoubtedly, proper actions of manufacturers may positively influence consumer acceptance (Diehl, 2002). These actions may, however, take a long time before their effects are noticed. Although, as shown in our research, innovators could be interested in new products, including CBM, still a great range of consumers do not consider such information as particularly important to them. Additionally, if there is no obligation to indicate on the packaging how classic meat is produced, the question remains if such information should be provided in the case of that cultured. Consequently, policy makers may consider legislation by which such information could not be especially exposed, at least until consumers' awareness of the technology has reached a level at which irrational fears and phobias that arise naturally in contact with new products and technologies are no longer significant. For example, in case of the EU, information about meat origin could be included into the descriptive name of the food product, instead of being provided as an additional statement. Since a descriptive name, as defined in EU Regulation 1169/2011 "means a name providing a description of the food, and if necessary of its use, which is sufficiently clear to enable consumers to know its true nature and distinguish it from other products with which it might be confused", this seems to also be the place where information about CBM should be included. This might also help protect *in vitro* technology avoid the fate of GMOs. As such, space also appears for scientists to conduct and disseminate objective as well as unbiased research to consumers to increase their evidence-based knowledge and reduce concerns.

Another important implication for manufacturers regards Consumer Innovativeness (CI), which considers the tendency to try new things. Innovative consumers may be more open towards novelties than product characteristics such as taste. Although it might seem that such consumers would be more interested in products marked as produced from cultured meat, according to our study, this is not the case. For them, it is often enough for the product to be new. Nevertheless, the fact that it contains cultured meat may be insignificant not only for all the consumers, but also for the innovators for whom this meat may not be perceived as an innovative product but only one produced in a new way that still tastes or looks similarly. Admittedly, it seems to be necessary to somehow inform consumers about cultured meat as many of them are ignorant of the technology (Soares Valente et al., 2019). However, marketing or other informative campaigns might not only be necessary, but also sufficient in the nearest future.

Another issue also arises concerning phobias which appear to be the most significant predictors of opposition to many new technologies, including cell-based meat (Verbeke et al., 2015). If producers want to expand the production of cultured meat, emphasizing that it is produced using *in vitro* technology (still unknown to many consumers and towards which consumers may express irrational fears) seems unjustified. However, what seems justified for producers is, first, making the technology more familiar to consumers and then, building the perception that the products based on it are healthy, tasty, natural (Bryant & Barnett, 2018; Siegrist et al., 2018) and animal-friendly.

Conclusion

Product labels act as a signal for consumers. They protect from making unaware purchasing decisions. However, labelling may also protect the traditional meat processing market, as enhancing the characteristics of the products may affect the consumers' tendency towards buying them. In addition, this may lead to greater tension between producers by creating a visible barrier to the

consumption by differentiating products that have been developed with the use of various technologies, such as cultured meat. In our research, it is shown that this type of information is not crucial.

Although the expectations of health-conscious and food technology neophobic consumers for various food label elements are higher than those of food innovators, the expectations for information regarding cultured meat, as well as GMOs and food irradiation are less significant than for other elements. This discovery may have far-reaching consequences as using additional restrictions or requirements towards the labels of cultured meat products may extend and, without adequate education, limit their popularization. As labelling products from the beginning of their entry on the market, with slowly growing awareness of sustainable consumption and production, may inhibit demand and thus, limit the popularization of alternatives to traditional meat production, we can pose a question, whether information about cultured meat should be placed on the labels. In line with the results of our research, this is not a must from the consumer's point of view, which is also the key conclusion that fulfils the aim described at the beginning of our manuscript.

Our research has certain limitations. The main one results from focusing on the market that has the highest level of meat consumption per capita in the world. Therefore, it would be worthwhile to conduct research in countries where this value is lower, which can be indicated as further research. In addition, an important direction for future research may be how labelling, and especially placing various graphic symbols on packaging, evokes specific consumer behaviour. Scientists in their future studies could also focus on understanding the changes in the perceived level of innovation of cultured meat products, which means exploring the extent to which such products are still perceived as something technologically new. It would also be important to discover changes in the perception of products by innovative and technologically neophobic consumers.

Notes/Przypisy

[1] The study was approved by The Poznan University of Economics and Business Committee of Ethical Science Research conducted with participation of humans; Resolution no. 9/2022.

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Menedżer ds. marketingu z piętnastoletnim doświadczeniem zawodowym: sześć lat w FMCG i dziewięć lat w branży technicznej, zarówno w marketingu B2C, jak i B2B. Wcześniej pracował w różnych firmach, w tym w międzynarodowych korporacjach. Odpowiedzialny za rynki Polski, innych krajów europejskich i pozaeuropejskich (w tym Afryki i Bliskiego Wschodu).

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