
Terminology of plant-based meat alternatives

A survey among Hungarian food science, food technology and nutrition experts

Kulcsszavak: plant-based meat alternatives, meat analogues, terminology, imitation meat

1. ÖSSZEFOGLALÁS

In order to contribute to the correct information of consumers, we sought the most appropriate, objective and widely used name in the literature for foods that are similar to meat products and are made exclusively from plant-based ingredients, called “plant-based meat alternatives” or “meat analogues”. It is necessary to use terms that are not misleading, objective and informative, but at the same time easy to understand.

A personal questionnaire survey was carried out with 58 native Hungarian-speaking food science, food technology and nutrition professionals to find the most professionally accepted, consensus-based Hungarian terms for the product group.

Based on the results of our survey, we recommend the use of the terms “substitute” and “substitute” for (meat), as opposed to “kind”, “analogue”, “alternative” and “imitation” for (meat), which were generally rejected. The adjective structure “vegetable” is generally more accepted than the adjective structure “vegetable”.

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2. Summary

Plant-based diets are becoming increasingly important for both health-conscious and environmentally conscious consumers and are even contributing to a sustainable food supply chain.

In the last few years, plant-based foods and prepared meals, which are traditionally known as meat-based dishes, have been increasingly available in increasing quantities and variety on the international and domestic markets. This is one of the biggest food innovations of our time and one of the most popular trends.

Burger alternatives and other new innovative products, alternative meat substitutes (so-called 'plant-based meat alternatives') such as 'vegan burgers', 'soy steaks', 'tofu sausages' and the like are emerging.

The consumption of plant-based foods is growing at an unprecedented rate [1]. Such foods are increasingly available to vegetarians and even more strict vegans, as well as to flexitarians who occasionally choose a meat-free diet.

After the first plant-based meat analogue, the Impossible™ Burger [2] and Beyond Meat [3], a succession of plant-based foods mimicking the colour, texture and taste of meat and meat products have appeared commercially and in fast food chains.

Flexitarians have become the largest dietary group after omnivores (carnivores) and have a major role to play in effectively reducing the consumption of meat and other animal products and thus in combating climate change [4].

Taking into account all those who actively reduce or completely abandon at least some animal products, including vegetarians, pescatarians and flexitarians, this group represents 30.8% of the total population: 10–30% of Europeans no longer consider themselves to be fully carnivorous.

Like the terms, 'vegetarian' and 'flexitarian', the terms 'plant-based diet' have no official definition in the EU. Nor has the meaning of the term 'plant-based meat alternatives', which is most commonly used in the English literature and press, been defined.

On the one hand, there has been a heated debate in the European Union about the designation of meat substitutes. Questions have arisen as to whether terms such as 'vegetarian hamburger' or 'soya sausage' are misleading to the consumer. The European Parliament has decided that 'meat' can be plant-based, but only milk of animal origin can be called milk. Plant-based products cannot be called milk, cream, butter, cheese or yoghurt because the legislation states that they can only be used to describe food of animal origin [5, 6].

On the other hand, there is no uniform terminology to describe this group of products, as the terms "meat analogues" and "meat substitutes" are used in international communication alongside "plant-based meat alternatives". In addition, "plant-based meat substitutes" and "plant-based meat alternatives" have started to be translated into Hungarian as "meat imitates" and other terms.

Obviously, simple, understandable terms should be used for consumers, but how acceptable are these to the professional public?

3. Objective

As the content of the Hungarian terms occasionally used for the so-called "plant-based meat alternatives" is unclear and they are not clearly synonymous, and some of them have a pejorative connotation (e.g., "imitation"), it was deemed necessary to develop a professional consensus on the subject in order to provide objective information.

Our aim was to achieve a broader acceptance of the terms, which would be easily understood by consumers.

4. Method

A survey was conducted among Hungarian experts (food science and technology, nutrition academia and industry) on the acceptable Hungarian names for foods made from plant-based ingredients and appearing to be meat products.

The questionnaire was sent to experts in person at conferences organised by the Hungarian Nutrition Society and the BSE Platform in June and October 2022, and by direct mail between June and October 2022. Lecturers and researchers from three major universities in Hungary, as well as middle and senior managers of food processing companies and employees of official food control institutions participated in the questionnaire based on a personal interview.

The first question of the questionnaire was a spontaneous question, asking respondents to identify the name of a product based on a picture of a product that looked like a hamburger but was described as being made exclusively from vegetable ingredients (**Figure 1**). At this point in the face-to-face interview, the respondent could not yet see the possible names offered.



Figure 1. Illustration used for the spontaneous response to our survey

The second set of questions offered possible different descriptions for the same food shown in the picture. From these, the respondent had to choose

- 1) which one is “not appropriate”,
- 2) which is “acceptable” and
- 3) which was completely appropriate (“completely agree”).

The third set of questions generally offered different options for the general description of plant-based foods that appear to be meat/meat products. These were to be judged according to the same three categories. Although we have tried to list as many possible answers in Hungarian as possible, we have tried to keep the questionnaire short, quick to fill in and to the point. Thus, the substantive questions were only one page, followed by a few demographic questions. The questionnaire is presented in **Table 1**.

5. Demographic data

The questionnaire was completed by 58 respondents in the form of a personal interview. Even for the demographic questions, our questionnaire only covered the strictly necessary facts, such as the gender of the experts, their professional experience (0-5; 6-15; 16+ years) and the sector in which they work (food processing; academic sector, i.e., university or research institute; official control and others). We also asked whether the respondent was a vegetarian or not.

6. Results

6.1 Spontaneous product name

In response to the first spontaneous question on how the respondent would name the product made exclusively from vegetable ingredients shown in **Figure 1**, the vast majority of respondents suggested the term “veggie burger”. A total of 77 possible names were collected from 58 respondents, of which 37 different names could be distinguished. One person could not suggest a Hungarian name. Twenty respondents gave two different answers.

Of the 77 responses, 23 gave the name “vegan burger” (29.87%) and 6 gave the name “vegan burger”. So the terms “vegan burger” or “vegan burger” were used in a total of 37.66% of the 77 responses. Furthermore, 6 people chose the name “hamburger”.

Below is a list in alphabetical order of all possible names that were mentioned by only one respondent:

organic burger fake burger, sustainable, yummy.yummy green burger, burger substitute, burger-like product, herba sandwich, meatless burger, fake burger, fake burger, non-burger, plant-based food, plant-based burger, plant-based burger,

Some respondents used the following terms to emphasise the vegetable nature of the product:

plant burger, plant burger, plant buri, plant patty, plant based food, plant based burger, vegetable burger, vegetable meatloaf, plant based burger, plant patty, herba sandwich, plant burger, plantby/plantby, vegetarian sandwich, veggie hamb, vegan protein hamb, veggie burger.

Others have suggested a sustainable name for plant-based products: green burger, green buri, green patty, green burger, sustainable.

And a group of respondents highlighted the origin of the product from non-animal meat, not “real” meat: fake burger, fake burger, fake hamburger, meatless hamburger, hamburger substitute, hamburger-like product, not burger.

There was also a reference to the innovative nature of the product: trendy burger.

The terms ‘organic burger’, ‘yummy-yummy’ and ‘sandwich’ did not fit into any of these categories.

6.2. Preferred terms

Based on the same picture (**Figure 1**), we asked targeted questions about possible Hungarian names for the product group. Sixteen different names were given (**Table 1**). These included the terms slice, scone (as meat patty), burger and hamburger, which were varied with vegetable, vegetable and vegetarian. Each respondent was asked to decide whether, as an expert, they fully agreed with the term, whether the term was acceptable to them or not acceptable at all. We deliberately did not give the answer option “I don’t know (decide)”.

The term “meat pie” was unanimously (98.25%) rejected by respondents. The term “vegetable meatballs” was also not liked by the experts, being rejected by 73%. Two thirds of experts (66.66%) rejected the term “hamburger”. The terms “vegetable schnitzel”, “vegetable schnitzel” and “vegetarian schnitzel” were unanimously (60%) rejected.

The least objection was to the term “veggie burger”, which was rejected by only 10%. The terms “vegetarian burger” and “veggie burger” were judged in the same way by the experts, with 50% in full agreement and 36% finding them acceptable.

The experts’ opinions on all the terms studied are presented in **Figure 2**.

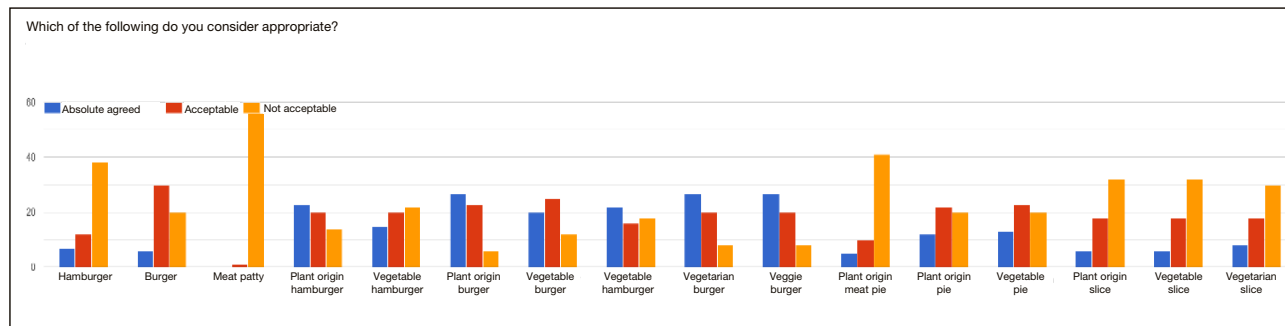


Figure 2. Acceptability of possible names for a food made from plant-based ingredients reminiscent of a traditional hamburger

6.3. General description of the product group

Foodstuffs made exclusively from vegetable raw materials, which are intended to replace or substitute foodstuffs made from meat of animal origin and which also resemble meat products in appearance, are gaining ground.

For the next question, we wanted to know what terms could be used in general for meat substitutes (often referred to as plant-based meat alternatives or meat analogues).

More general terms such as “meat substitute”, “meat substitute”, “meat analogue”, “meat-like”, “alternative” or “meat imitation” were given.

While in the English literature the terms plant-based meat alternatives or plant-based meat analogues are most commonly used, Hungarian experts have rejected the names described as meat alternatives or meat analogues by mirror translation.

The term “plant-based meat” was rejected by 74% of the experts, and the terms “meat-like” (72.7%), “meat alternative” (59%) and “meat analogue” (52.7%) were not considered appropriate. The term “imitation meat” was considered inappropriate by half of the respondents (51%).

The lowest level of disagreement (16%) and the highest level of agreement (41%) was found for “meat substitute (food) of plant origin”. This was followed by the term “meat substitute (food)” with 35% support and 19.6% disagreement. In both cases the word “... substitute” was used. The term “meat substitute (food)” was considered acceptable by more than half of the respondents (50.8%). A summary of the results is shown in **Figure 3**.

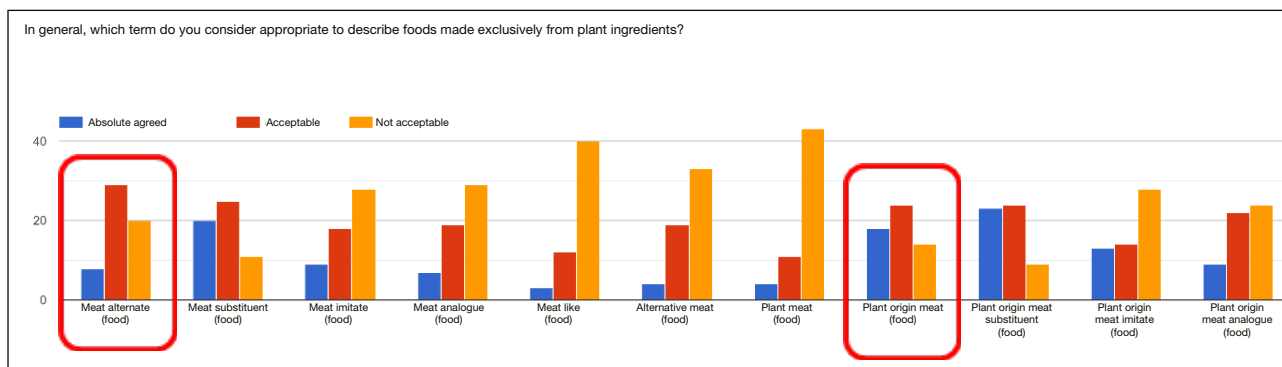


Figure 3. Acceptability of generic names for the product group

So, based on the experts’ opinions and the results of our survey, we recommend the use of the terms “substitute” and “replacement”, as opposed to “kind”, “alternative” and “analogue”, which were generally rejected.

When completing our questionnaire, we also gave respondents the opportunity to suggest other generic terms, and 17 respondents took up this option. Some of the relevant suggestions are: “do not include the word meat at all”, “it is better to use the name of the raw material (e.g., mushroom) instead of ‘vegetable’ or ‘plant’” and “vegetable protein preparation”.

The adjective structure ‘vegetable’ is generally more acceptable than the adjective structure ‘vegetable’. For example, for both “veggie burger” vs “veggie burger” and “veggie hamburger” vs “veggie hamburger”, the “veggie” product name was more acceptable.

Taking the “completely agree” and “agreeable” responses together, the support for the terms “vegetable burger” (76%) and “vegetable burger” (89%) was higher in both cases compared to “vegetable burger” (61%) and “vegetable burger” (78%).

6.4. Presentation of demographic data

A significant number of respondents were women (68.4%).

When asked if the professional completing the questionnaire declared themselves to be a vegetarian, a low proportion of respondents answered yes, only 3.5%, which is below the number of vegetarians in the national population, estimated to be around 5%. Since the respondents belonged to a narrower segment, the difference between the percentage obtained and the expected percentage can be considered to be within the margin of error.

Based on the answers to the questions on professional experience, the majority have been in the field for more than 16 years and are therefore considered to be senior experts.

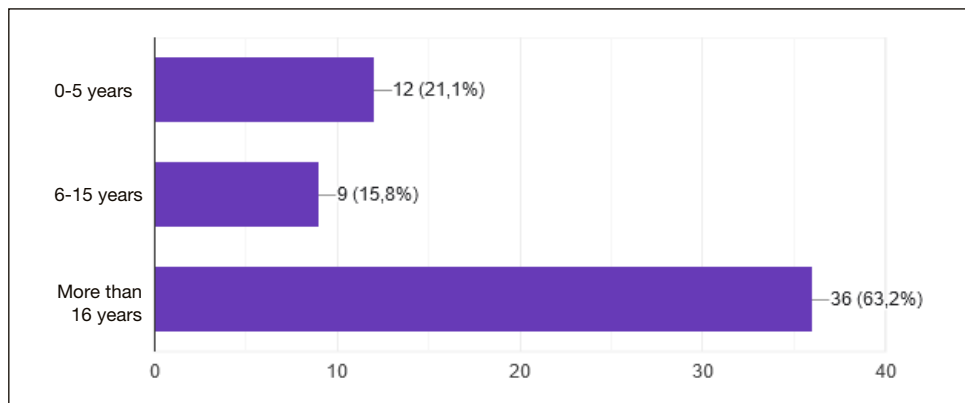


Figure 4. Distribution of experts by experience

There were four possible answers based on the field of work experience and two options were possible, as it is realistic that experts may have additional activities or spent a significant part of their career in another field.

Almost one third of respondents (28.6%) work in the food processing sector.

Unsurprisingly for the authors, there is a predominance of respondents from the academic sector (57.9%), but it is important to stress that this includes universities, research institutes and all other publicly or privately funded research organisations. But, as mentioned above, there were several possible answers.

Only 8.8% of respondents work in the field of public control.

Thus, a total of 95.3% of respondents work in food processing, academia and official control. This means that almost five percent of respondents (4.7%) work in other fields. In our direct experience, this includes, for example, consultants and those working in the government sector.

7. Acknowledgements

We would also like to thank the food experts working in universities, research institutes, food industry and regulatory control organisations who helped us with our questionnaire by providing their opinions during the face-to-face interviews.

8. Annex

You are looking at a picture of a food made exclusively from plant ingredients

How would you name the product?"

Answer:

“Which of the following names do you consider appropriate?”

	completely agree	acceptable	not appropriate
Hamburger			
Burger			
Meat patty			
plant hamburger			
Vegetable hamburger			
Plant burger			
Vegetable burger			
Vegetarian hamburger			
Vegetarian burger			
Veggie Burger			
Plant meat patty			
Plant patty			
Plant patty			
Vegetable patty			
Plant patty			
Vegetarian patty			

“In general, which term do you consider appropriate to describe foods made exclusively from vegetable ingredients?”

	completely agree	appropriate	no agree
Meat substitute (food)			
Meat substitute (food)			
Meat imitation (food)			
Meat analogue (food)			
Meat-like (food)			
Alternative meat (food)			
Vegetable meat (food)			
Vegetable meat substitute (food)			
Vegetable meat substitute (food)			
Plant-derived meat substitute (food)			
Meat analogue of plant origin (food)			

Other, namely:

Demographic data (used for statistical analysis purposes only):

Gender:

Male	Female

Vegetarian

Yes	No

You age:

0-5 years	6-15 years	more than 16 years

Professional experience in food science, technology or nutrition:

Yes	No

Employed/worked in academia:

Yes	No

Worked/worked in the field of official control:

Yes	No

Worked in other fields:

Yes	No

If you would like to comment in more detail on this topic or would like to receive the results, please provide your name and contact details.

Name	
E-mail:	
Phone no	

For the research at the Institute of Food Engineering at the University of Szeged, please allow about 6-7 minutes. Your answers will be used anonymously.

You are looking at a picture of a food made exclusively from plant-based ingredients:



9. References

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