2-1-2023

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Recommended Citation

Shahida Anusha Siddiqui, Francesca Gerini, Ali Ikram, Farhan Saeed, Xi Feng, and Yanping Chen. "Rabbit Meat—Production, Consumption and Consumers' Attitudes and Behavior" *Sustainability* (2023). https://doi.org/10.3390/su15032008

sustainability

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Review

Rabbit Meat—Production, Consumption and Consumers' Attitudes and Behavior

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Abstract: Rabbit meat could play an important role in health, the rural economy, and sustainable development. Rabbit meat has excellent nutritional features, such as high protein content, low-fat content, and a high percentage of unsaturated fatty acids, low cholesterol and sodium levels. In addition, rabbit meat production contributes to maintaining economic activities in rural marginal areas. However, the consumption of rabbit meat is still limited due to several factors such as the higher cost of commercial food that is slowing down rabbits' breeding. Socio-demographic characteristics, attitudes, and nationality of consumers influence the demand and consumption of rabbit meat. The social and economic changes of the past years are leading to an increased interest in rabbit meat products with convenience characteristics. Consumers are also increasingly paying attention to animal husbandry methods for health concerns and ethical reasons. This paper presents an overview of rabbit meat focusing on production, nutritional composition, consumers' preferences, and marketing. The review proposes strategies that, coupled with information campaigns could improve consumers' knowledge of the positive characteristics of rabbit meat, which would contribute to the market development.

Keywords: rabbit meat; nutrition; marketing; consumers' attitudes; consumers' preferences; rabbit farming

Citation: Siddiqui, S.A.; Gerini, F.; Ikram, A.; Saeed, F.; Feng, X.; Chen, Y. Rabbit Meat—Production, Consumption and Consumers' Attitudes and Behavior. *Sustainability* **2023**, *15*, 2008. https://doi.org/10.3390/su15032008

Academic Editor: Rosa Maria Fanelli

Received: 5 December 2022
Revised: 16 January 2023
Accepted: 17 January 2023
Published: 20 January 2023

1. Introduction

Meat and meat products can be termed functional, but they also have adverse nutrients, such as high calories, high saturated fat content, and cholesterol, which are associated with obesity, hypertension, diabetes and cardiovascular disease [1]. These nutrients can be reduced by carefully selecting the meat fraction consumed, regulating productive factors, feeding, and modifying the carcass postmortem [2,3].

Since the primary early civilizations in the Mediterranean basin, rabbit-based food dishes have been regularly produced and consumed. Rabbit is simple to grow and eco-friendly on farms and in backyards. In terms of rabbit production, there are significant variances between countries [4,5]. Asia accounted for 70.5 percent of global rabbit meat production quantity in 2020, followed by Europe (Table 1). According to estimated values retrieved from FAOSTAT, in the period 2010–2020, global rabbit meat production decreased by 24.1% [6]. However, different trends occurred among continents. A great reduction in rabbit meat production was observed in Europe (−41.2%), while increases occurred in

Africa (+23.5%). China and the Democratic People's Republic of Korea are the top two producers [6]. According to data retrieved from FAOSTAT [6], rabbit meat production in China has progressively decreased from 690,000 tons in 2010 to 456,552 tons in 2020 (−33.8%), while in the Democratic People's Republic of Korea, rabbit meat production recorded an increase from 133,900 to 142,769 tons (+6.6%) [6]. A range of innovative rabbit meat alternatives are available in the market, including smoked, canned, frozen, cured, sauce-picked, dried, and roasted products as well as rabbit meat sausages.

Table 1. Rabbit meat production in quantity and heads.

Area	Production Quantity (Tonnes)		Heads (1000)	
	2010	2020	2010	2020
World	1,185,447	899,726	814,841	608,188
Africa	78,638	97,122	70,170	81,387
Americas	17,550	15,429	14,672	12,904
Asia	828,586	634,025	570,261	401,248
Europe	260,673	153,150	159,738	112,650

Note: Data retrieved from FAOSTAT [6].

Rabbit meats have high protein content, low fat content, a high percentage of unsaturated fatty acids, and low cholesterol and sodium levels [7]. Rabbit meat has relatively higher energy values (899 kJ/100 g in the forelegs and 603 kJ/100 g in the loin), which is equivalent to that of many types of red meat typically consumed [8]. This is because of its high protein contents, which provide 80% of the total energy of the human diet [9]. Therefore, rabbit meat is highly recommended for pregnant women, adolescents, and aged people [10]. The nutritional composition of the two major parts of the rabbit meat has been shown in Table 2.

Table 2. Nutritional composition of different parts of rabbit meat.

Compounds	Fore Part	Hind Part	References
Protein (weight %)	16.5–21.8	18.2–22.1	[11,12]
Moisture (weight %)	69.6–79.1	73.8–79.3	[11,12]
Fat (weight %)	0.8–8.8	0.5–3.7	[11,12]
Carbohydrate (weight %)	0.1–0.6	0.1–0.6	[11,12]
Gross energy (Kcal/100 g)	86.3–161.3	85.8–118.9	[11,12]
Cholesterol (mg/100 g)	24.2–103.4	25.0–120.3	[12–14]
LDL (mg/100 g)	5.8–26.5	3.6–78.4	[12–14]
HDL (mg/100 g)	5.9–32.7	5.5–35.7	[12–14]
SFA (mg/100 g)	32.5–41.7	35.7–42.4	[12–14]
MUFA (mg/100 g)	25.7–31.8	26.1–31.2	[12–14]
EPA (mg/100 g)	0.1–1.1	0.0–0.1	[12–14]
DHA (mg/100 g)	0.2–0.6	0.2–0.7	[12–14]

This review aims to provide an overview of previous studies on rabbit meat focusing on production, nutritional features, consumers' preferences and marketing. The analysis of key features related to rabbit farming and consumption can provide useful implications for farmers, industry, marketers, and policymakers that can be the basis for the implementation of strategies aimed to develop the industry of rabbit meat.

2. Rabbit Meat Production

2.1. Sustainability in Rabbit Meat Production

Rabbit production can be a valuable alternative in terms of economic, social, and environmental sustainability [15,16]. Rabbit farming for meat consumption is mainly practiced in rural areas and exerts economic opportunities for farmers as well as a favorable impact on population maintenance in marginal areas [1]. As a result, rabbit farming contributes to

maintaining rural economic activities (e.g., meat production, leather production, feed mills, etc.), counteracting the process of abandonment of rural areas [17–19].

Rabbit breeding also has important characteristics in terms of environmental sustainability. The environmental sustainability of a meat production system strictly depends on its efficiency, which is closely related to the ability of animals to convert feed into meat [15]. In this regard, rabbits are capable to transform 20% of the protein they consume in their diet into muscle mass, a conversion that is close to those of poultry (22%) [20]. The efficiency of protein transformation into meat is higher in rabbits than in other livestock such as beef, where it varies between 8% and 12%, and in swine, where it ranges between 16% and 18%. Thus, the capability of animals to convert feed into meat is a key characteristic for predicting the economic performance and environmental sustainability of the farming system [21]. Moreover, rabbits can adapt to a variety of ecosystems and can also feed on food waste and agricultural by-products [22,23].

According to past research on various animals, feed is the most significant issue in the environmental effects of rabbit meat. Given the concerns about feed conversion during the final weeks of fattening, the scenario characterized by excessive rabbit production has a particularly significant environmental effect that is unlikely to improve with enhanced management tactics [15]. Despite their herbivorous nature, rabbits have an environmental impact that is slightly higher compared to that of chickens but similar to that of pigs. The ability to replace a portion of soybean meal to alternative protein feeds (including peas, sunflower meal, rapeseed) could reduce the environmental impact of rabbit production, allowing a grower to compensate for the higher feed modification as well as lower slaughter yield. The mortality rate could be regarded as a significant factor not only in evaluating productive results, but also in determining rabbit farm environmental efficiency [24].

Traceability is an important requirement for farms, feed mills, and slaughterhouses. The extent to which farms, feed mixers, and slaughterhouses cooperate in the supply chain depends on the country. There are examples where they are quite independent of each other. In other cases, the farm, the feed mixer, and the slaughterhouse are managed by one owner. Large corporations upgrade their voluntary traceability systems and label indicators to restore customers' trust in meat products. Their purpose is to offer and guarantee product safety and quality by monitoring the entire food supply chain from farms to shops [25]. In this regard, rabbit breeding organizations are highly integrated. By collecting documentation and labeling, the identification of rabbit carcasses from a farm is preserved. However, individual farms and slaughterhouses might have a tough time establishing a traceability system on their own without organizational and technical help [4].

2.2. Factors Affecting Rabbit Meat Quality

The quality of the rabbit meat is relatively consistent. Although, rabbits were chosen for slow growth, they have better carcass shape and an increased muscle-to-bone proportion. Animals chosen for rapid growth rate increased fat content as well as lipolytic activities in the back leg meat, whereas oxidative parameters and free fatty acids are unaffected by genetic makeup [4]. According to the findings of Blasco et al. [4], weaning age has no effect on post-weaning weight growth, feeding economics, feed efficiency, or death rates. As a result, weaning at one month would allow the doe to be ready for mating sooner, accelerating the breeding rate. Growth rate as well as feed efficiency reduced at 2 months of slaughter age. As a result, weaning at one month of age and killing at 2 months of age appears to be the most cost-effective method of producing rabbit meat.

The primary concerns are temperature and season. An increased environmental temperature above the thermoneutrality value decreases feed consumption. Consequently, it decreases the growth of rabbit and leads to a lower weight. However, in some cases, a high ambient temperature can contribute to a better slaughter yield due to its lower percentage of skin, unfilled gut, and offals at commercial slaughter age [18]. Similarly, due to the existing thermostatic system of intake control and the increased energy needed for

thermoregulation, temperature below the thermoneutrality value influences growth rate as well. Seasonal effects on growth and yield can be reduced significantly if the environmental temperature could be governed at the thermoneutrality range. When compared to rabbits grown in thermoneutral surroundings, rabbits kept at high temperatures have paler meat and larger saturated fatty acids proportions [21]. Additionally, raising the energy density of diets by adding lipids can promote growth performance at high ambient temperatures [26].

Rabbit welfare and housing system can result in final meat and carcass quality [7]. The European Food Safety Authority (EFSA) Panel on Animal Health and Welfare provided a scientific opinion with an overview of the main risk factors associated with different housing systems, types of rabbits and their consequences on the behavior and health of the animals [27] (Table 3). The risks can be associated with factors, such as housing, genetics, nutrition, feeding, biosecurity, reproduction management, and ambient conditions. The quality of the diet has been a major production-limiting factor in many rabbit house projects. It has been noticed that farms supply a limited selection of feeds (e.g., only grass). Inadequate farmer training and/or low motivation, a lack of a feeding strategy plan, and the season are some of the reasons. In the case of limited-resource, feedstuffs for rabbits should ideally be obtained from the farm using cheap and renewable resources. The United States Department of Agriculture (USDA) has classed rabbits based on their weight, size, and pelt type. At adulthood, little rabbits weigh roughly 1.4 to 2 kg; intermediate breeds 4 to 5.4 kg, and big breeds 6.4 to 7.3 kg [28].

Table 3. Major factors affecting the rabbit meat and carcass quality.

Risk Factors	Housing System	Rabbit Type	Behavior Related	Health-Related
Housing	Conventional cages	Young	Resting	Hunger/Thirst
Genetics	Structurally enriched cages	Old	Fear	Injuries
Nutrition	Floor pens	Small in size	Restriction of movement	Skin lesions
Feeding	Elevated pens	Large in size	Small space	Reproductive disorders
Biosecurity	Outdoor systems			Heat stress
Reproduction management	Self-made system			Cold stress
Ambient conditions				Mastitis

Note: re-elaboration on information retrieved from Saxmose Nielsen et al. [27].

Aside from water, the primary components of meat are proteins and lipids. Rabbit meat is a meat rich in protein with great biological value and high quantities of necessary amino acids. Furthermore, meat is a good source of readily available micronutrients like vitamins and minerals. In addition, rabbit meat does not comprise uric acid and contains a low purine content. The available information on the chemical components of rabbit meat is highly variable, particularly in terms of fat content, based on the part of carcass and the various productive factors, particularly feeding factors, which have a strong impact on the chemical components of rabbit meat, particularly on its lipid composition [21].

The effects of various cooking methods on the edible and nutritional characteristics of rabbit meat were studied using boiling, sous-vide cooking, steaming, microwaving, roasting, frying, and pressure-cooking processes. The physicochemical properties of cooked rabbit meat changed greatly depending on the processing procedure. Among them, sous-vide rabbit meat had lower cooking losses, and less elasticity; roasting of rabbit meat is harder and better to digest; and deep-fried rabbit meat was fairly hard, chewable, and had a bright golden color [27].

The major risks linked to the housing system include stocking density, light conditions, and materials used. Genetic selection of the rabbit has resulted in lines with a higher growth rate and muscle mass. However, breeds exhibit issues of reduced robustness and more nervous behavior, which leads to the danger of creating fear and injuries to other rabbits. Unbalanced diets and the poor quality of feed and water are other issues to be

taken into account. To get a high-quality rabbit meat, the rabbit should have easy access to water and feeders. Biosecurity is another element to be considered: diseases and infections should be avoided on the farm. Reproduction management should avoid poor quality or limited amount of feed and water, poor welfare conditions, and poor health conditions of the doe. Unfavorable ambient conditions also should be avoided.

The quality of rabbit meat also depends on the housing system, which can take place in cages, pens, or outdoors. Each system may present particular problems to different types of rabbits depending on their age and size. In addition, there may be animal welfare issues that affect meat quality. These may be behavioral due to conditions that prevent rest, create fearful situations, or prevent movement due to confined space. Health-related factors that may affect rabbit meat quality are hunger, thirst, injuries, reproductive disorders, and heat/cold stress.

2.3. Rabbit Meat Supply Chain and Marketing

The rabbit supply chain has undergone profound logistical and organizational changes over the ages. Prior to the industrial era, farmers would sell rabbits to butchering or sell them immediately to the market. Many urban animal-producing and butchering systems were located in rural areas [10], such as in Spain [29]. After that, their yields skyrocketed to meet the demands of consumers as well as cities expanding. Rather than being identity, farms needed to concentrate on certain products, such as selling rabbit carcasses to small stores, butcher shops, and restaurants in towns or cities. After the Second World War, the arrival of particular breeds and industrialized feed was another game-changer for European agriculture. This was especially the case in Europe, in which rabbit consumption was already popular [30]. As a result, the size of rabbit-producing firms grew steadily larger, while their total number minimized substantially.

Different measures are commonly used to determine the commercial market value of an item. One of them, for example, is the market share, or the percentage of physical or monetary units that this commodity represents inside the respective sector. In European countries, the mean market price of rabbit meat at butcheries and poulterers ranges from 5 to 10 Euro/kg, while broiler is normally priced between 2.50 and 5.95 Euro/kg [31,32]. As a result, rabbit meat becomes naturally in decline, particularly among low-income households. Meanwhile, the most common difficulty is a paucity of rabbit meat in butcher shops [33], which means that urban inhabitants who enjoy rabbit meat could only purchase it in a few places. The primary issue in raising rabbits rationally is the higher cost of commercial food which is double for broilers and 20–30% higher than for pigs [7,34]. This is partly because feeds, such as corn, soybean meal, dried alfalfa, and other foods are used for the feed [35]. Dehydrated alfalfa, as well as soybean meal, typically make up 30 to 40% and 10 to 20% of a rabbit's feed intake, respectively [13].

Customer perceptions, on the other hand, are used to assess the food market. Two principles, in particular, assist us in evaluating it. These are the "image" and "placement". Consumers describe a product/brand by its image, which is based on key characteristics [36]. In other words, placement is a reflection of brand perceptions as well as their traits in the markets. Attributes are used to define or depict a product when it is broken down into its constituent variables. The most important attributes that consumers consider for evaluating rabbit meat are taste, healthiness, price, origin, and production method [7]. The brand/company image is defined as the way customers perceive the brand/company, i.e., the impression they have of it and its products. It can depend on a number of elements including product quality, communication and everything related to brand identity [37]. In the case of rabbit meat producers, animal welfare conditions and the quality of feed may represent important elements for the definition of the company image. The position of qualities and brands aids in the analysis of their relationship and can determine brand competition when a similar feature is linked with numerous brands or items. Similarly, if a feature is present but there is no brand nearby, it signals new marketing opportunities.

3. Consumer's Demand and Preference for Rabbit Meat

Changes in sociodemographics, incomes, eating habits, and prices along with the increasing consumers' concern for animal welfare, environmental and health issues are affecting both the amount and type of meat intake [38]. Among these factors, income and population growth are the key drivers. The availability of income drives a shift towards more expensive sources of protein. Up to 2030, predictions project a population growth of 11% and a consequent increase of 14% in meat consumption [38]. Greater increases in meat consumption are foreseen in developing countries (+30% in Africa, +18% in Asia and +12% in Latin America) compared to developed countries (+0.4% in Europe and +9% in North America) [38]. The analysis of yearly per capita consumption provides further details on meat demand. In 2020, the world's average meat per capita consumption was 34.44 kg considering only beef, sheep, pork and poultry [39]. Poultry and pork meat account the highest per capita consumption (14.78 kg and 11.42 kg, respectively), followed by beef (6.41 kg) and sheep (1.82 kg) [39].

Further details about rabbit meat consumption can be provided by the apparent consumption per capita. The world yearly per capita consumption of rabbit meat is estimated to be 0.19 kg [40], a very small amount compared with poultry, pork and beef meat. However, per capita, consumption values vary amongst countries. The highest ones occur in the Democratic People's Republic of Korea (6.81 kg), Czech Republic (3.74 kg), Spain (1.09 kg), and Italy (0.91 kg) [40]. In European Union, the average consumption per capita of rabbit meat is 0.51 kg, while in China it is 0.61 kg [40].

Results indicated that there is a high proportion of consumers who do not eat rabbits (34–35%) [17,36]. Those who consume rabbit meat rarely eat it, with an average frequency of one to three times a year (29–79% of survey respondents), which is lower than those for other meat types [36,41].

Socio-demographic characteristics and nationality of consumers are factors that influence the demand and consumption frequencies of rabbit meat. Past studies showed that men eat rabbit meat more frequently than women [33,36,42]. Higher rabbit meat consumption was observed in older age classes [17,36] and higher-income consumers [5]. Instead, lower education was correlated with higher consumption of rabbit meat [43]. Culinary tradition was found to be among the major determinants of differences among countries. In Mediterranean countries, where rabbit farming has ancient origins, consumption was higher than in countries, such as North America, where there are no long-established culinary traditions for such meat [30,43].

4. Rabbit Meat Consumption and Consumers' Attitude

A strong predictor of rabbit meat consumption is consumers' attitude, defined as the positive or negative judgment towards a behavior [5,7]. Attitude depends on consumers' beliefs and perceptions about the consumption of rabbit meat [44]. The investigation of beliefs and attitudes towards rabbit meat is pivotal for understanding the trends of consumption in numerous countries. Positive beliefs about rabbit meat have a positive impact on attitude, and consequently, on the consumption of the product. The most important beliefs and perceptions towards rabbit meat regard product features such as sensory characteristics, healthiness, convenience, ethics, production process, and price [7].

With regard to the sensory characteristics of rabbit meat, studies on consumer preferences found mixed results. People who consumed rabbit meat thought it had a pleasant, delicate flavor and was tender [41,42]. On the contrary, consumers who avoided rabbit meat judged it to have an unpleasant taste [45]. Moreover, consumers, especially the youngest ones, considered rabbit meat to appear disgusting, particularly when it was sold as a whole carcass with the head [30,45].

Some studies analyzed beliefs about the healthiness of rabbit meat regarding the perceptions of the nutritional value of the product. A segment of consumers perceived rabbit meat to be healthier than other meats and fish [33]. In particular, consumers had positive perceptions about the low fat and cholesterol contents of rabbit meat [46]. However, most

consumers were not aware of the numerous beneficial dietetic aspects of the product [36,41]. Informing consumers about the nutritional properties good for the health of rabbit meat would improve their attitude toward the product [43,47].

The social and economic changes of the past years are leading to an increased interest in products with convenience characteristics [48]. Convenience aspects of the products include all the characteristics that help consumers to reduce time and effort in all food-related activities [49]. While many ready-to-cook and ready-to-eat meat alternatives (i.e., beef and chicken) are available on the market, there is no wide range of rabbit meat products with convenience features [7,50]. Rabbit meat is usually sold as a whole carcass as its cooking is linked to traditional local recipes that require a long time and cooking skills [17]. Another characteristic that influences the ease of consumption of rabbit meat is the presence of numerous bones. Consumers, especially the youngest ones, think that the small size and fragility of bones can make rabbit meat consumption experience very difficult [45].

In recent years, consumers are increasingly paying attention to animal husbandry methods for health concerns and ethical reasons [51]. This growing interest is a consequence of the various episodes of animal disease-related food scares [52] and the increasing concern for animal welfare and environmental issues [44]. Consumers have a negative perception of intensive livestock farming and systems involving caging of animals [53]. In this regard, organic certification is intended to guarantee higher standards of animal welfare and respect for the environment. Rabbit organic farming represents a very appreciated attribute for which a large segment of consumers is willing to pay a premium price (+15%) compared to conventional products [54]. Hence, the positive attitude towards organic products offers producers an opportunity to differentiate rabbit meat in the market and to protect animal welfare and the environment in a context of sustainability. A further element that has an impact on consumers' attitudes to the consumption of rabbit meat is linked to ethical beliefs. A segment of consumers does not eat rabbit meat for moral and emotional reasons because they consider rabbit as a pet or a rodent [46,55].

Attitude toward rabbit meat consumption also depends on beliefs about features linked to the production method such as origin and feeding. Consumers attach importance to the local origin of the meat for quality reasons [42] and commitment to the local economy [5]. Moreover, consumers believe that natural feed given to rabbits is an important element for ensuring the healthiness of the meat [5].

Finally, perceptions about price have a relevant impact on attitude to consumption [56]. Consumers have opposite beliefs about rabbit meat prices. On the one hand, a segment perceives rabbit meat as more expensive than other meats [42,55]. On the other hand, a group of consumers believes that rabbit meat has a good value for money compared to other meats for its healthiness [42,46]. The price of rabbit meat cannot be lowered otherwise the profit margin on high production costs would be reduced [42]. Hence, in order to improve price perceptions, information campaigns on the health benefits of consuming rabbit meat should be performed. Figure 1 shows a schematic representation of the beliefs identified by the literature affecting consumers' attitudes toward rabbit meat consumption.

Based on barriers to rabbit meat consumption and consumer attitudes, product characteristics should be improved to increase the market for rabbit meat. For instance, ready-to-eat or ready-to-cook products made according to traditional recipes with an appetizing taste even for young people and the reduced presence of bones could reach a new consumer segment. In addition, the local origin of rabbit meat would represent an important lever to improve the social, environmental and economic sustainability of the food system [57].

All these product strategies coupled with information campaigns to improve consumers' knowledge of the positive characteristics of rabbit meat could contribute to market development. An effective strategy to spread information about rabbit meat and reach consumers, especially younger ones, could be the use of online channels such as social media. Understanding the needs of consumers is fundamental to designing the features of the product. In particular, marketers should segment consumers into homogenous groups

to offer products that meet consumers' preferences and expectations [8]. Information and advertising campaigns should be adapted according to the sociodemographic and psychographic characteristics and preferences of the target segment.

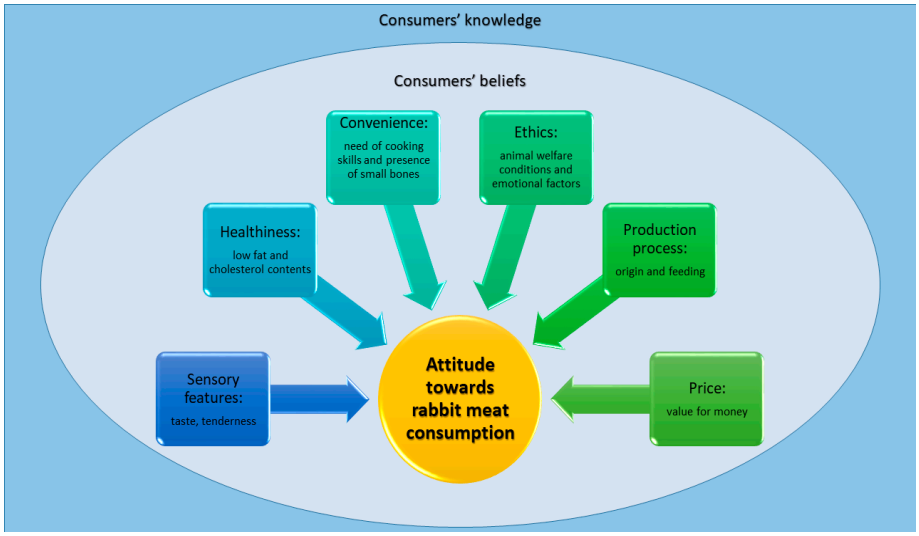

Figure 1. Consumers' beliefs have an impact on their attitudes toward rabbit meat consumption.

5. Consumer Behavior Associated with Rabbit Meat as Functional Foods

The growing consumers' awareness of the close link between nutrition and health has led to an increased demand for functional foods [58]. Functional foods are products with certain nutritional characteristics whose consumption has beneficial effects on the body's functions and/or reduces the risk of diseases [59]. Functional products can be unmodified food or food with added, removed, or modified nutritional element(s) through technological or biotechnological techniques [59]. The increasing interest of consumers in functional foods can be strategic also for the meat industry, to enhance the quality of the products and improve consumers' negative perceptions about the unhealthiness of meat through the diversification of products with health-beneficial properties [60]. Moreover, promoting the consumption of functional foods is strategic to contribute to the reduction of public health costs.

Functional meat can be obtained by following two different ways: the reduction of components with negative health implications or the addition of those with beneficial properties [61]. In particular, the strategies for improving the functional features of meat are (i) the addition of functional ingredients during meat processing (e.g., vegetable proteins, fibers, spices, herbs, probiotics); (ii) the enhancement of functional compounds formation during processing; (iii) the addition of functional nutrients in the animal diet (e.g., $n-3$ polyunsaturated fatty acids ($n-3$ PUFA), conjugated linoleic acid, vitamins, minerals) [61].

Studies on consumer preference and acceptance of meat with functional properties are few and even more limited on rabbit meat. On the one hand, consumers regard meat as a nutritious food containing numerous beneficial components such as protein and fatty acids like $n-3$ PUFA [60]. On the other hand, the consumption of red meat, especially processed ones, is associated with an increased risk of cardiovascular disease, cancer, and mortality [62,63]. For these reasons, consumers are increasingly demanding meat with functional characteristics such as reduced fat and salt content [64]. Rabbit meat proves to be a type of meat that can play a functional role in the health of consumers as it intrinsically possesses numerous nutritional healthy characteristics such as a high percentage of polyunsaturated fatty acids such as omega-3, protein and vitamin contents, and lower fat and cholesterol contents than other meats [47,65]. The excellent nutritional properties of rabbit meat can be further improved by the enrichment of the animals' diets with natural feed such as bilberry, thyme, or linseed [66–68]. Experimental studies demonstrated that

the enhanced fodder for rabbits further improved the fatty acid composition (an increase of $n-3$ PUFA) of the meat without modifying the physicochemical properties and sensory features [66,67]. Moreover, free-range breeding of rabbits also improved the concentration of $n-3$ PUFA in the meat and the antioxidant capacity compared to cage rearing [69].

No studies have been carried out on consumers' preferences and willingness to pay for meat from diet-enhanced rabbits, as has been performed for other types of meat [70,71]. Few studies have been conducted on consumer behavior and perceptions about the functional role of rabbit meat for health. In a survey conducted in Hungary, Szendrő [36] found that consumers considered rabbit meat to be healthy because of its high protein content, its lower fat and cholesterol contents than other meats, and its high content of $n-3$ PUFA. However, a high percentage of consumers (42.3%) stated that they were unaware of the health benefits. In this regard, consumers indicated that they would like to know more about the nutritional and functional aspects of rabbit meat.

Another study on this subject was carried out by Petrescu and Petrescu-Mag in Romania [33]. After having explored rabbit meat consumption habits and analyzed drivers and barriers to consumption by Romanian consumers, the authors focused on perceptions regarding the functional role of rabbit meat. After a taste, consumers declared that low cholesterol and leanness are the main reasons for eating rabbit meat. The same outcomes were found in Spain by Buitrago-Vera et al. [8] and Kallas and Gil [46]. Moreover, Petrescu and Petrescu-Mag [33] detected that Romanian consumers think that rabbit meat is healthier than other meats and fish. These results confirm the importance of promoting rabbit meat as a functional food. However, consumers gave a very low score when explicitly asked to rate how functional rabbit meat is. One explanation for this outcome may be that most consumers were aware of the nutritional characteristics of rabbit meat, but did not associate them with positive health effects.

Consumers are demanding food with functional effects on their health but they are not well informed about food with these features such as rabbit meat. The findings underline the importance of communication campaigns to make consumers aware of the multiple nutritional characteristics and functional role of rabbit meat. In this regard, rabbit meat can be improved by feeding and mixing in components with functional value to obtain functional meat with a key role in consumers' diets for preventing diseases. Although the consumption of meat, especially red meat, is criticized for leading health diseases [63], the consumption of white meat such as rabbit may be a carrier of beneficial compounds [60]. This might present an opportunity for producers who could develop functional meat to meet the growing consumer interest in such products [61]. A meat-based functional food could improve the image of meat by satisfying the consumer demand for food with beneficial compounds for health. Moreover, the promotion of the consumption of white meat with functional compounds such as rabbit meat can be pivotal for reducing public health care spending.

6. Segmentation of Rabbit Meat Consumers

Consumer segments might theoretically be targeted by different marketing approaches [72]. The market of rabbit meat has been segmented based on socioeconomic as well as demographic characteristics such as gender, age, education and level of living [8,73]. However, psychographic aspects like values and lifestyles have proven to be more effective in defining consumer categories. This outcome has been observed also in studies about rabbit meat market segments [33,74]. Food-related behaviors are a set of patterns, networks and cognitive categories that connect food-related actions to values. Lifestyles include subjective perceptions derived from product information and consumer experience, which influence customer values, as well as objective procedures used by the consumer to acquire, eat, or deny foods [75]. As a result, lifestyles delve into the mental pattern that governs customer behavior and extend beyond individual activities. The food-related lifestyle (FRL) model, giving insight into the aspects that influence customers' value views, is effective

in profiling segments of consumers characterized by homogeneous preferences for rabbit meat [8].

In today's marketplace, a comprehensive understanding of customers' preferences is vital. Consumers can be segmented according to the consumption frequency of rabbit meat [43]. The segment described by higher rabbit meat intake is constituted of those over 55, lower education and income consumers, and households without children under age 18. These findings are extremely beneficial to the many stakeholders including the customer chain, who may utilize them to develop a strategy to increase rabbit meat consumption [1].

7. Conclusions and Future Perspectives

In this manuscript, the authors propose and analyze strategies for launching the rabbit meat industry. Religious objections to rabbit meat intake are uncommon, implying that a global market can be tapped in theory. The education of consumers using social media could improve their knowledge of the nutrients of rabbit meat. Further communications and marketing techniques such as education on the cooking knowledge required to cook and prepare rabbit meat both for daily usage and complex recipes for important events could be developed to assist the resumption of the meat of rabbits both in typical and starred hotels. To increase the availability of rabbit meat on the market, the innovation of ready-to-cook and ready-to-eat products makes rabbit meat products with convenience features. The product characteristics should be improved to increase the market for rabbit meat. The excellent nutritional properties of rabbit meat can be further improved by the enrichment of the animals' diets with natural feed such as bilberry, thyme, or linseed. Free-range breeding of rabbits also improves the concentration of $n-3$ PUFA in the meat and the antioxidant capacity compared to cage rearing for the higher quality of nutrition based on grazed plants. In addition, ready-to-eat or ready-to-cook products made according to traditional recipes with an appetizing taste even for young people and the reduced presence of bones could reach a new consumer segment.

Understanding the needs of consumers is fundamental to designing the features of the product. Marketers should segment consumers into homogenous groups to offer rabbit meat that meets consumers' preferences and expectations. In particular, consumers could be segmented according to lifestyles or food choice motives to identify aspects that influence the choice of rabbit meat. Moreover, the local origin of rabbit meat would represent an important lever to improve the social, environmental and economic sustainability of the food system. Products with organic certification, which guarantees higher standards for animal welfare and environmental safeguard, might also be appreciated by consumers. The findings could help the stakeholders, including the customer chain to develop a strategy to increase rabbit meat consumption. All these product strategies coupled with information campaigns to improve consumers' knowledge of the positive characteristics of rabbit meat could contribute to market development.

Author Contributions: Conceptualization—S.A.S.; methodology—S.A.S.; software—S.A.S.; validation—S.A.S., F.G., F.S. and X.F.; formal analysis—S.A.S.; investigation—S.A.S.; resources—S.A.S. and F.G.; data curation—S.A.S. and F.G.; writing—original draft preparation—S.A.S., F.G., A.I., X.F. and Y.C.; writing—review and editing, S.A.S., F.G. and X.F.; visualization—S.A.S. and F.G.; supervision—S.A.S.; project administration—S.A.S.; funding acquisition—F.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable. The current study did not require ethical approval, as no experiment was performed on humans or animals.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

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

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