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Original Scientific Paper**MEAT DECLARATION – CONSUMER OPINION AND CONFIDENCE****Jelena JANJIĆ^{1*}, Milan Ž. BALTIC¹, Mirjana LOVRENOVIĆ², Slaven GRBIĆ³, Drago NEDIĆ¹, Spomenka ĐURIC¹, Branislav VEJNOVIĆ¹, Lazo PENDOVSKI⁴, Milorad MIRILOVIĆ¹**¹ University of Belgrade, Faculty of Veterinary Medicine, Belgrade, Serbia² Republic of Srpska Inspectorate, Banja Luka, Bosnia and Herzegovina³ Pan-European University Apeiron, Faculty of Health Sciences, Banja Luka, Bosnia and Herzegovina⁴ Ss. Cyril and Methodius University in Skopje, Faculty of Veterinary Medicine – Skopje, Republic of North Macedonia

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Summary

One of the main goals of food safety measures is to increase consumer confidence in food in general, and meat in particular, and therefore consumers are provided with information about the quality and safety of meat through declaration. Consumer confidence and food safety have become central issues in the food chain. Recent developments in labelling, traceability and quality assurance schemes offer a large amount of information available to the consumer. Declaring is today one of the most reliable ways of informing consumers about food quality. For the purposes of this study, data were collected by surveying 1,000 consumers from the Banja Luka and Gradiška areas. The results of this survey show that the majority of consumers (98.1%) believe that meat should have a declaration and that the statistically most important ($p < 0.05$) information on the declaration is the expiration date (75.8% of responses) compared to other information (nutritional value, method of production, country of origin). The way the meat is packaged is also important for consumers (45.3% of responses). Also, the statistical significantly different answers ($p < 0.05$) were given related to the trust in information about the safety/quality of meat obtained in different ways (butcher, seller, relative, friend, cook). The consumers showed that they mostly believe to information about the safety/quality of meat received from doctors/nutritionists (53.1%), and most often have a neutral attitude towards information received from consumer protection associations (41.9%). It is not sufficiently clarified what type of information consumers are most looking for on declarations, especially when it

comes to meat and meat products. Because of that, continuous examination of consumers is needed, including sociological and economic factors, what motivates them to buy, what quality characteristics they require and what sources of information they believe the most.

Keywords: meat safety and quality, meat labeling, origin of information.

INTRODUCTION

Objective information regarding food products does not guarantee consumer confidence in them. One of the main goals of food safety measures is to increase consumer confidence in food and reduce uncertainty, and therefore provide consumers with information about the quality and safety of meat. Consumer confidence and food safety have become a central issue in the food chain (Grunert, 2005; Röhr et al., 2005; Verbeke, 2005).

As end-users in the meat production chain, consumers occupy a key position since they are at the end of this chain, however from the aspect of inspiration for a consumer-driven chain organization or market planning orientation, consumers can be found in the first place of a "consumer-driven chain and market planning orientation". The latter makes consumer demand for safe and healthy food in general, and meat in particular, the biggest driving force for the introduction of various information systems such as branding, traceability and quality assurance schemes (Gellynck and Verbeke, 2001).

In the context of food systems, confidence is closely related to risk. The connection between confidence and risk is interesting because confidence does not recognize the presence of risk. In the case of confidence, the risk is not noticed. At the same time, the amount of confidence in food can be defined as the opposite of the amount of food risk (Grunert, 2005). Moreover, the relationship between food risk and confidence is inversely proportional because people who have a higher level of confidence in the food system will be less concerned about risks and vice versa (Knight and Varland, 2005). The dichotomy between confidence and risk is related to the provision of information, because confidence can be understood as an individual and subjective response to an objective and rather unrealistic concept of risk (Berg, 2004). In this way, communication strategies must take into account the transformation of objective risk into a subjective response in terms of confidence.

Recent developments in labelling, traceability and quality assurance schemes offer a large amount of information available to the consumer. In terms of consumer perception, however, it is not so simple. Objective information is not automatically reflected in perception, because the latter does not depend only on

the amount of published information, but also on the emotional content of the message (Rosa et al., 2006). The objective content of the message will be perceived differently by different consumer segments (Bernués et al., 2003; Frewer et al., 2005; Miles and Frewer, 2001; Verbeke and Vackier, 2004). Also, there is a real potential danger of consumer information overload. Increased amounts of information, for example on a product label, can overload the label or package and make it difficult to extract the given and desired amount of information, or simply lead to individuals who do not have the time or ability to process the information ignoring it, and thus producers' profits decrease due to reduced interest in the product (Salaün and Flores, 2001). Also, the given information can cause boredom and impatience, as well as loss of self-confidence among consumers due to misunderstanding of the labels on the product declaration.

Food labeling is an increasingly important way to deliver messages to consumers about the safety and integrity of food. For a long time, however, it was considered that it is not so important what consumers want and whether they adequately understand and use the information given on the declaration. It has been shown that consumers also often misunderstand or misinterpret information, e.g. those related to quality or origin, which leads to the formation of expectations of that quality that may not be confirmed by the actual performance of the product after consumption (Grunert, 2005).

Declaring is today one of the most reliable ways of informing consumers about food quality. Until a little more than ten years ago, there were no special regulations on food declaration, but declaration was an integral part of regulations on the quality of certain types of food, e.g. Rulebook on the quality of meat products (Regulation, 1974). In the territory of the Republika Srpska, the legal framework defining the declaration of food is given through the Food Law (Regulation, 2017) and the Rulebook on providing information to consumers about food (Regulation, 2018). The aim of these regulations is to protect the health of the consumer, for the consumer to choose the food he wants based on the information from the declaration, then to define the rules that would prevent technical obstacles in the food trade, and to manage the risk in the case of a risk of harmful effects of food by applying these regulations on consumer health. The entity in the food business under whose business name the food is placed on the market is responsible for information on packaged food products, and the entity in the food business that packages the food at the point of sale to the final consumer is responsible for information on unpackaged food. The text of the food declaration should contain the following information: the name under which the food is placed on the market, list of ingredients, quantity of certain ingredients or

categories of ingredients, net quantity, shelf life, storage conditions or conditions of use, name and address of the entity in the food business under which the meat and meat products are placed on the market, country of origin, instructions for use if it can be expected that the food could not be properly prepared and used without such instructions, and information on the nutritional value, which should contain the energy value and the amount of fat, saturated fatty acids, carbohydrates, proteins and salt. The Food Law defines the general conditions for food and animal feed safety, the obligations and responsibilities of subjects in the food and animal feed business, including traditional products, as well as other issues of importance for food and animal feed safety, in order to protect life and health of people, the environment, consumers and the efficiency of functioning on the market.

The goal of the study was to determine whether certain information on the declaration manages to create additional confidence among consumers in the safety and quality of the meat.

MATERIALS AND METHODS

For the purposes of this study, a quantitative questionnaire was used as a tool for examining consumers' attitudes about the quality and safety of meat.

The survey was conducted in 2017 and 2018, and the survey included the population from the area of the cities of Banja Luka and Gradiška (urban areas). Data were collected until 1,000 validly filled survey forms were collected, which means that surveys that were not filled in, that is, where answers to certain questions were not given, were not included in the data processing procedure.

Demographic data on the participants refer to: age, education and gender. The survey participants were of different ages, from 20 to over 60 years old, on the basis of which they were divided into five groups (intervals of ten years). In relation to education, the most numerous group in the study were those with secondary education (53.10%), followed by respondents with higher education (38.9%) and groups with the lowest education. Respondents were 45.80% women and 54.25% men.

The chi-square test was used to compare the frequency of non-parametric features. Trend analysis and the degree of determination show the degree of agreement of respondents to a certain statement.

The significance of the differences was determined at significance levels of 5%. The statistical analysis of the obtained results was done in the statistical package PrismaPad 8.00 (GraphPad Software, San Diego, California USA, www.graphpad.com). The obtained results are presented tabularly and graphically.

RESULTS AND DISCUSSION

Consumers are informed about the quality of meat in different ways. One of them is the declaration on the product. Today, in most countries, efforts are being made to protect consumers, so their rights are also legally protected. Their rights are protected by state organizations for consumer protection, as well as non-governmental non-profit organizations (companies). In the Republic of Srpska, food declaration is mandatory and most consumers are familiar with it. This is indicated by the fact that 98.1% of surveyed consumers believe that meat should have a declaration on the basis of which certain information about it would be obtained (Figure 1).

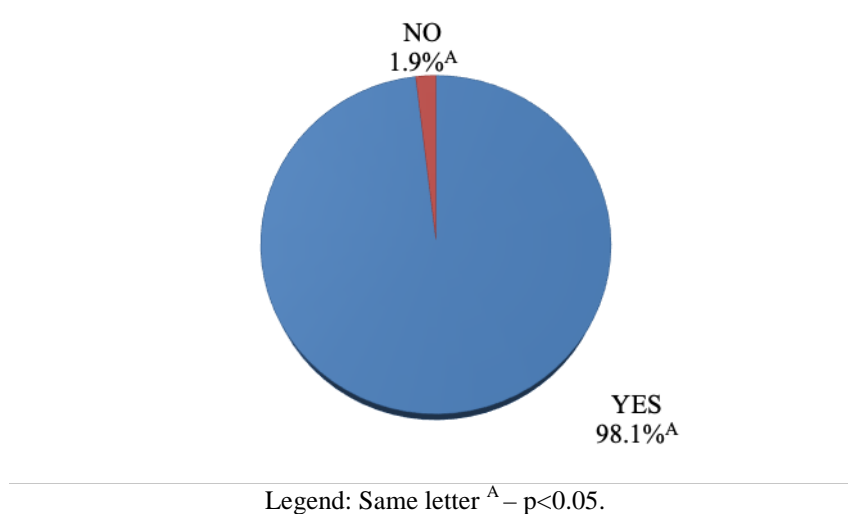


Figure 1 Declaration on meat - "I think the meat I buy should have a declaration with information about it" (n=1000)

When asked about the quality and safety of the meat they buy, 56.3% of respondents believe that the declaration provides information about the quality and safety of the meat they buy, which is statistically significantly higher ($p < 0.05$) than the frequency of responses that such information is not they can gain from the declaration (11.5% of responses). Close to one third of respondents are not sure that the declaration provides information about the quality and safety of the meat they buy. The statistical significance of the differences between the three offered answers is shown in Table 1. This can be explained by the bad experience of consumers with the declaration and the actual quality of the food.

Table 1 What does the information on the declaration represent for respondents (n=1000)

Does this information tell you about the quality and safety of the meat you buy?	Answer (%)
Yes	56.3 ^{A,B}
No	11.5 ^{A,C}
Not sure	32.2 ^{B,C}

Legend: Same letters ^{A,B,C} – $p < 0.05$.

According to data provided by EFSA (2019), for the European Union and Serbia, the origin of food is important for 53% of those surveyed in the EU, and 41% of those surveyed in Serbia. In Serbia, the price of food is far more important (61% of responses) than in the EU (51% of responses). The importance of food safety related to the risks of food consumption is approximately equal for respondents in the EU (50%) and Serbia (52%), as is the importance of the taste of food when shopping (EU 49%, Serbia 52% of respondents). For respondents in the EU, the nutrients in food (vitamins, proteins, sugar, fats) are far more important (44% of respondents) than in Serbia (31% of respondents). Also, for survey participants from the EU, ethical attitudes and beliefs (religion, animal welfare, environmental protection) are more important when buying food (19% of respondents) than in Serbia (10% of respondents) (Baltić et al., 2015).

For the consumer, the most important information about meat is the one related to the expiration date (75.8% of responses) and it is statistically significantly higher ($p < 0.05$) than other information (nutritional value, method of production, country of origin). Of the respondents, 30.3% consider the method of production to be important, which, when it comes to fresh meat, refers to hygiene during slaughtering, processing the carcass, cooling and cutting the meat. Consumers also emphasize importance to the country of origin of the meat (for 23.4% of respondents, this is significant). From this answer, it is not possible to understand whether the consumer trusts domestic producers more than meat imported from another country. One-fifth (20.5%) of consumers believe that the declaration should contain data on the nutritional value of meat, as this is important information for them. A statistically significant difference ($p < 0.05$) was found between the answer "Method of production" and the answers related to "Nutritional value", i.e. "Country of origin" (Table 2). One-fifth (20.5%) of consumers believe that the declaration should contain data on the nutritional value of meat, as this is important information for them (Table 2). A statistically significant difference ($p < 0.05$) was found between all three offered answers regarding the relationship between meat safety/quality and the country of origin. A statistically significant difference ($p < 0.05$) was also found among the

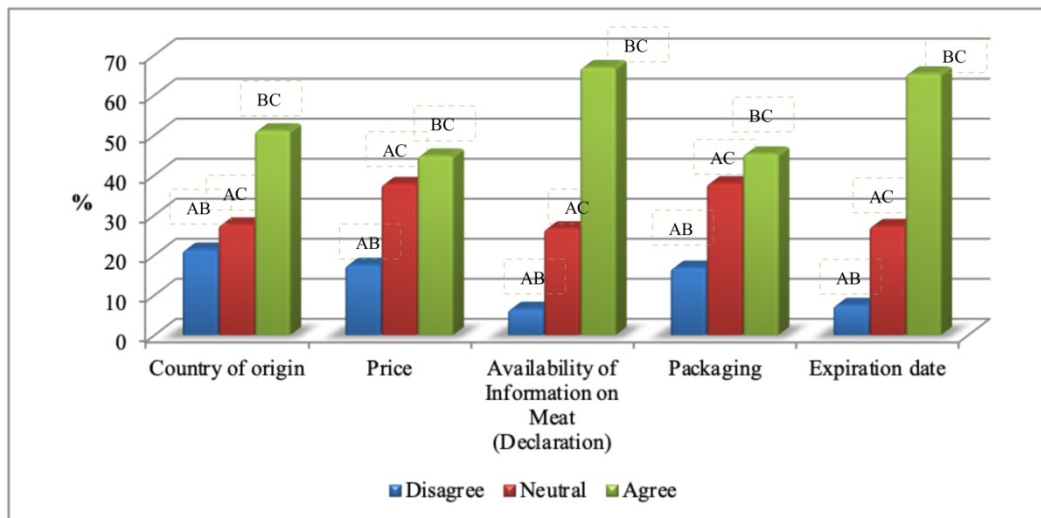
connection between safety/meat quality and price, followed by other available information, shelf life and packaging method.

Table 2 The most important information on the declaration (n=1000)

In my opinion, the most important information on the declaration is:	Answer (%)
Nutritional value	20.5 ^{A,B}
Method of production	30.3 ^{A,C,D}
Country of origin	23.4 ^{C,E}
Expiration date	75.8 ^{B,D,E}

Legend: Same letters ^{A,B,C,D,E} – $p < 0.05$; The total sum is greater than 100% due to the possibility of giving more than one answer to the question.

Consumers are also informed about the safety and quality of meat based on the information on the packaging (declaration). The declaration contains information about the country of origin, price and other information about the meat that may be important for informing consumers about the safety/quality of the meat. The way the meat is packaged is also important for consumers (45.3% of responses). A significant part of the respondents, i.e. over half (51.1%) consider or give importance to the origin of the meat, 26.7% have a neutral attitude, and over a fifth (21.3%) believe that the country of origin is not important for the safety/quality of the meat significant. A statistically significant difference ($p < 0.05$) was found between all three offered answers regarding the relationship between meat safety/quality and the country of origin. A statistically significant difference was also found among the connection between safety/meat quality and price, followed by other available information, shelf life and packaging method. A statistically significant difference ($p < 0.05$) was found between the degree of agreement between the answer "Method of production" and the answers related to "Nutritional value", i.e. "Country of origin" (Figure 2). The fact that the degree of agreement with the mentioned information is from 44.8% (price) to 66.9% (availability of information) shows that the information referring to the quality/safety of meat is important to the consumer.



Legend: Same letters^{A,B,C} – $p < 0.05$; degrees of agreement were compared.

Figure 2 What information do you consider important for establishing meat safety/quality?

In addition to personal experience and knowledge related to the determination when buying meat, as well as based on insight into the declaration and knowledge from the text of the declaration, consumers are also informed about the quality of meat from other sources. Thus, in most cases, consumers recognize the safety/quality of meat if they have information about the breeder, if they get this information at the point of sale, the mark of organic production and the source of information about the meat. Between all offered degrees of agreement, a statistically significant difference ($p < 0.05$) was found between the frequency of responses.

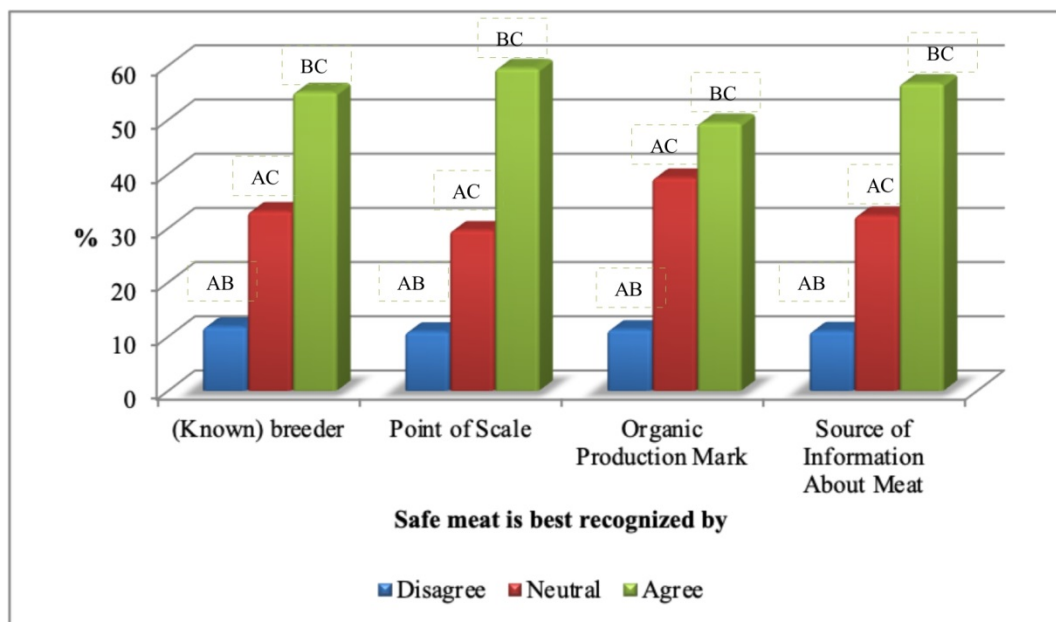
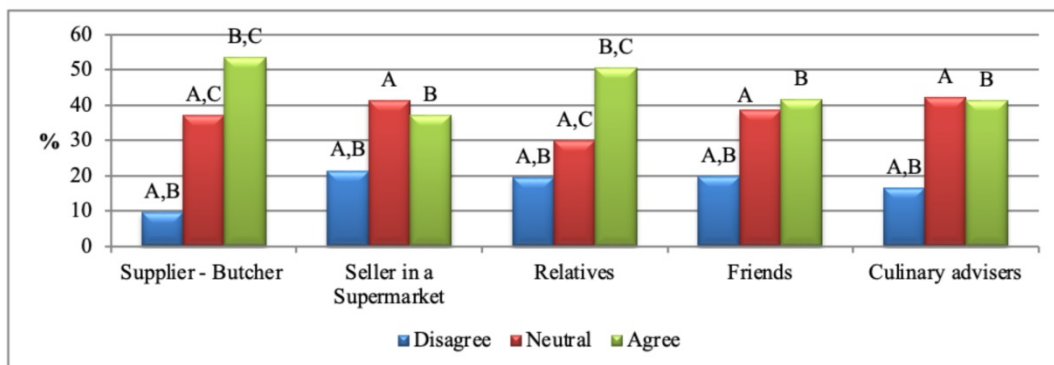


Figure 3 Recognizing the safety/quality of meat based on different parameters

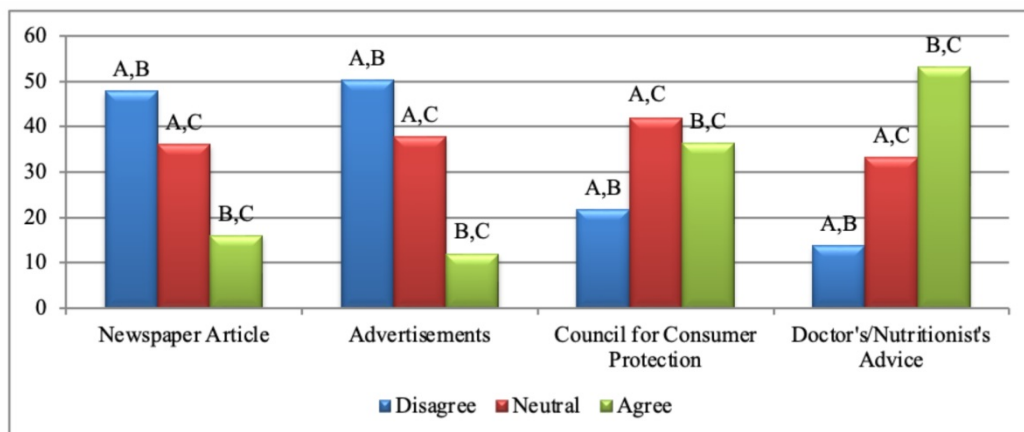
Consumers are informed about the quality/safety of meat from meat suppliers, relatives, friends, and cooks (Figure 4). They have less confidence about the characteristics of meat when they get it from a seller in a supermarket, than when they get information about the characteristics of meat from butchers. It is obvious that consumers have more opportunities to communicate with the seller in butchers than in supermarkets. Half of the respondents (50.2%) have confidence in information received from relatives, 41.6% from friends, 41.4% from cooks culinary advisers. The statistical significance of the differences in confidence in information on the safety/quality of meat (butcher, seller, relative, friend, cook) is shown in Figure 4. In all cases of comparison, the answer "I disagree" is always statistically significantly lower ($p < 0.05$).



Legend: Same letters ^{A,B,C} – $p < 0.05$; degrees of agreement were compared.

Figure 4 From whom you have the most confidence in the origin of information about the quality/safety of meat?

Today, consumers are also informed about food safety/quality from other sources (public information media, consumer protection associations, advice of doctors/nutritionists). According to the frequency of the answer "I do not agree", consumers have the least confidence in the information related to the safety/quality of meat that they get from advertisements (50.2% of respondents), followed by newspaper articles (47.8% of respondents). Consumers most trust information about the safety/quality of meat obtained from doctors/nutritionists (53.1%), and most often have a neutral attitude towards information obtained from consumer protection associations (41.9%) (Figure 5). The statistical significance of the differences between the offered answers about consumer trust in information from public media, consumer protection associations and doctor/nutritionist councils are shown in Figure 5.



Legend: Same letters ^{A,B,C} – $p < 0.05$; degrees of agreement were compared.

Figure 5 Source of information on meat quality and safety - media, public information

In the European Union (EU 28), according to the EFSA survey (2019), consumers have the most trust in the following sources, given in descending order: scientists (82% of responses) > consumer organizations (79%) > farmers (69%) > state institutions (60%) > EU institutions (58%) > non-governmental organizations (56%) > journalists (50%) > supermarkets and restaurants (43%) > food industry (36%) > celebrities and influential people (19%). This series has a slightly different order for Serbia: scientists (81% of responses) > farmers (70%) > consumer organizations (68%) > state institutions (56%) > food industry (55%) > supermarkets and restaurants (51%) > EU institutions (49%) > non-governmental organizations (40%) > journalists (36%) > celebrities and influential people (32%) (Baltić et al., 2015).

Consumers clearly make difference regarding to information labels in terms of importance and usefulness and appear much more willing to use *search quality* labels than *credibility quality* labels when making meat purchasing decisions. This finding is consistent with previous studies which reported that consumers are more open to using easy-to-understand and familiar quality labels (Grunert, 2005; Gellynck et al., 2006). Specific traceability information is ranked low in terms of perceived importance and usefulness (Hobbs et al., 2005).

CONCLUSION

Consumer confidence can be built by securing products and participants in the food system. Product assurance through declarations on food packaging that inform about food characteristics, country or region of origin and food traceability is an important set of signs and sources of information that consumers trust when evaluating the safety and quality of food at the time of purchase. However, our survey did not sufficiently clarify what type of information consumers are most looking for on declarations, especially when it comes to meat and meat products, which is why a continuous survey of consumers is justified, including sociological and economic factors, what motivates them to buy, what quality characteristics they require and which sources of information they trust the most.

Future research could focus on pessimists' willingness to pay for traceability systems or additional traceability information, which is augmented by information on the production process and on a more precise characterization of this market segment (e.g. place of purchase, moment of meat consumption).

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REFERENCES

- Baltić M.Z., Glišić M., Janjić J., Marković R., Bošković M., Dokmanović M., Đorđević J. (2015): Značaj informisanosti potrošača pri izboru namirnica. *Veterinarski žurnal Republike Srpske*, 15(1).
- Berg L. (2004): Trust in food in the age of mad cow disease: a comparative study of consumers' evaluation of food safety in Belgium, Britain and Norway. *Appetite*, 42(1):21-32.
- Bernués A., Olaizola A., Corcoran K. (2003): Labelling information demanded by European consumers and relationships with purchasing motives, quality and safety of meat. *Meat science*, 65(3):1095-1106.
- EFSA. (2019): Scientific opinion on the public health hazard to be covered by inspection of meat (swine), European Food Safety Authority, EFSA Journal, 9(10):198.
- Frewer L., Fischer A., Scholderer J., Verbeke W. (2005): Food safety and consumer behaviour. In *Innovation in agri-food systems, product quality and consumer acceptance*. Wageningen Academic Publishers, 125-145.
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- Gellynck X., Verbeke W. (2001): Consumer perception of traceability in the meat chain. *German Journal of Agricultural Economics*, 50(670-2016-45573):368-374.
- Gellynck X., Verbeke W., Vermeire B. (2006): Pathways to increase consumer trust in meat as a safe and wholesome food. *Meat Science*, 74(1):161-171.
- Grunert K. G. (2005): Food quality and safety: consumer perception and demand. *European review of agricultural economics*, 32(3):369-391.
- Hobbs J. E., Bailey D., Dickinson D. L., Haghiri M. (2005): Traceability in the Canadian red meat sector: do consumers care? *Canadian Journal of Agricultural Economics/Revue canadienne d'agroéconomie*, 53(1):47-65.
- Knight A. J., Warland R. (2005): Determinants of food safety risks: A multi-disciplinary approach. *Rural Sociology*, 70(2):253-275.
- Miles S., Frewer L. J. (2001): Investigating specific concerns about different food hazards. *Food quality and preference*, 12(1):47-61.
- Propis, (2017): Zakon o hrani. Službeni glasnik Republike Srpske, 19/17.
- Propis, (1974): Pravilnik o kvalitetu proizvoda od mesa. Službeni list SFRJ, 29/74.
- Propis, (2018): Pravilnik o pružanju informacija potrošačima o hrani. Službeni glasnik Republike Srpske, 9/18.
- Röhr A., Lüddecke K., Drusch S., Müller M. J., Alvensleben R. V. (2005): Food quality and safety-consumer perception and public health concern. *Food control*, 16(8):649-655.
- Rosa F., Sanchez M., Barrena R. (2006): Confidence in consumer–retailer relations and quality label as a compensation of the inefficiency of beef meat markets: a compared analysis among Canada, Italy and Spain. In 99th European Seminar of the EAAE on ‘Trust and risk in business networks, Proceedings, 235-250.
- Salaün Y., Flores K. (2001): Information quality: meeting the needs of the consumer. *International journal of information management*, 21(1):21-37.
- Verbeke W. (2005): Agriculture and the food industry in the information age. *European review of agricultural economics*, 32(3):347-368.
- Verbeke W., Vackier I. (2004): Profile and effects of consumer involvement in fresh meat. *Meat science*, 67(1):159-168.

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