

# The acceptance of health related innovations in traditional meat products by Croatian consumers

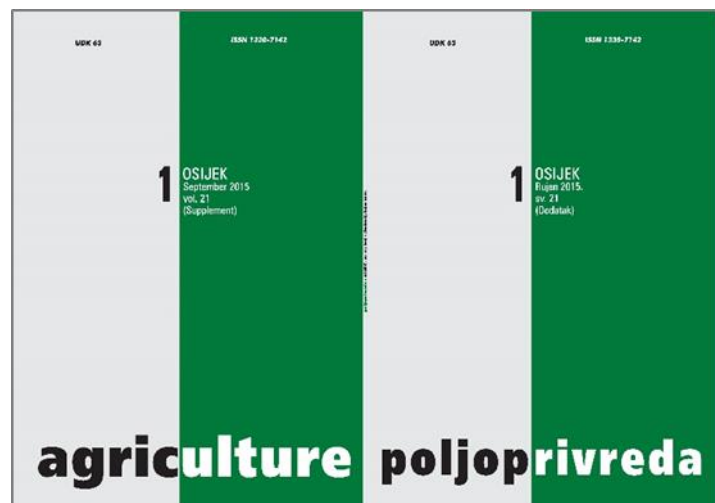
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# THE ACCEPTANCE OF HEALTH RELATED INNOVATIONS IN TRADITIONAL MEAT PRODUCTS BY CROATIAN CONSUMERS

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Preliminary communication

## SUMMARY

*The aim of this study was to examine Croatian consumers' acceptance of health related innovations in traditional meat products. A face-to-face survey was conducted with a sample of 151 visitors of a specialized fair of traditional food products in Zagreb in 2013. The respondents were asked to indicate their attitudes on a five-point scale, where 1 meant rejection or no impact and 5 meant full acceptance or high impact. Results (mean  $\pm$  SD) showed the highest level of acceptance for innovations related to better control of smoking conditions ( $3.3 \pm 1.14$ ) and reduction of salt content ( $3.1 \pm 1.15$ ), followed by reduced fat content ( $3.0 \pm 1.14$ ) and controlled fermentation ( $2.9 \pm 1.12$ ). The perceived negative impact of innovations on traditional character of meat products was highest for fat ( $3.4 \pm 0.99$ ) and salt ( $3.4 \pm 1.03$ ) reduction and lowest for controlled fermentation ( $3.2 \pm 1.04$ ) and smoking conditions ( $3.2 \pm 1.05$ ). With regards to respondents' socio-demographic features a nonparametric test statistic (Mann-Whitney U) revealed a higher acceptance of fat reduction and higher willingness to increase a consumption of healthier traditional meat products among females, while age, education level and income had no influence on the investigated parameters. In addition, some health related innovations; e.g. fat reduction and controlled fermentation were generally less acceptable among respondents with a high consumption frequency of traditional meat products. The results of this preliminary study indicated controlled smoking conditions as the best accepted health related innovation by Croatian consumers with the least negative impact on perceived traditional character of product. In general terms, women were more likely to accept some of the investigated innovations and consequently to increase their consumption of innovate products. However, the most regular consumers of traditional meat products were less open towards innovations which may pose a challenge to further improvements in this traditional food sector.*

**Key-words:** traditional meat products, innovations, health, consumers, acceptance

## INTRODUCTION

Despite the growing globalisation of today's food markets and the abundance of uniform and cheap industrial food items the traditional food products remain an important part of human culture, identity and heritage, with generally positive perception by consumers due to the characteristics linked to regional identity and sensory quality (Guerrero et al., 2009; Vanhonacker et al., 2013). As a result of this positive public image a demand for traditional foods is increasing in many western countries (Almli et al., 2011). Furthermore, the production of traditional food products, especially those of animal origin, is often closely related to a less intensive traditional production systems which usually rely

on local natural and human resources and, as such, play an important role in the maintenance of environment and socio-economic development of rural areas which would, otherwise, be depopulated. In this broader context, both food manufacturers and public authorities are increasingly interested in traditional foods sector, giving it good prospects for future growth. However, the production of traditional foods, which is generally carried out by small and medium low-tech artisanal enterprises, still largely relies on traditional manufacturing practices, often with low competitiveness and poor efficiency (Fito

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and Toldra, 2006). In order to cope better with arising market opportunities the traditional food sector also faces the need to continuously innovate and develop its produce (Kühne et al., 2010; Vanhonacker et al., 2013). In this regard, traditional food producers have been recommended to extend their skills in modern production techniques, management and marketing, as well as in promoting the aspects of their products related to nutritional and health issues (European Communities, 2007). Nevertheless, the success of improvements in traditional food sector is riskier than in other sectors of food industry, because consumers tend to reject innovations affecting the traditional character of the product (Almli et al., 2011), and therefore a good understanding of consumers perceptions, expectations and attitudes towards any innovation is required prior to its implementation (Kühne et al., 2010). Meat products, in general, have been often criticized for being too high in fat (Higgs, 2002) and salt (Žlender, 2009), and thus potentially unhealthy for consumers. Traditional meat products in particular may additionally be associated with lower hygienic and microbial standards (Skandamis and Nychas, 2007) and greater exposure to potentially unhealthy substances from the smoke (Andrés et al., 2007). As consumers today increasingly demand, not only safe and tasteful traditional food products, but also more convenient and more nutritive and healthier types of products, this study aimed to investigate the acceptance of health related innovations in traditional meat products by Croatian consumers.

## MATERIAL AND METHODS

In order to collect data a face-to-face survey was conducted in April 2013 at a specialised fair for traditional food products in Zagreb, Croatia. The exhibits in the fair presented various traditional products and customs of Croatian villages, including meat products. Numerous visitors had the opportunity to become familiar with and to buy traditional products during three days of the fair. The fair visitors were selected as a sample group because it could be assumed that these fair visitors are interested in traditional, small farm products and therefore they represent an interesting respondents group for this research. The survey was performed with a randomly selected 151 fair visitors of different sociodemographic characteristics (Table 1).

**Table 1. Sociodemographic characteristics of the sample**

		% of the respondents
Gender	Male	51.3
	Female	48.7
Age	Less than 25 years	14.6
	25 - 35 years	27.8
	36 – 45 years	20.8
	46 – 55 years	18.8
	56 or more years	18.1
Education	Primary school	6.6
	Secondary education	51.0
	University education	42.4
Perceived family income	Very low	2.0
	Low	12.6
	Average	67.5
	High	15.9
	Very high	0.7

The acceptance of four innovations in traditional meat products (better control of smoking conditions, reduction of salt, reduced fat content and controlled fermentation) that would lead to production of healthier products were measured on a five-point scale, usually used in Croatia, where 1 meant rejection of the innovation and 5 full acceptance of the innovation. Further, respondents were asked to express their attitude on a negative impact of the related innovations on traditional character of the meat products. The attitudes were also measured on a five-point scale with 1 meaning no negative impact and 5 meaning high negative impact. Data were analysed with descriptive statistics (mean values and standard deviations) in order to discuss consumers' acceptance of selected innovations as well as their attitude on a negative impact of different innovations on traditional character of meat products. Mann-Whitney U test was used to test the differences between sociodemographic and consumption frequency groups regarding their willingness to accept innovations as well as their perceived negative impacts of innovations on traditional character of meat products. All analyses were made in SPSS statistical package version 17 (SPSS, 2008).

## RESULTS AND DISCUSSION

### Buying and consuming behaviour regarding traditional meat products

Two third of respondents of all sociodemographic characteristics make a distinction between traditional and industrial meat products, out of which a great majority (97.1%) prefer traditional products. Most of the respondents (41.1%) buy traditional meat products occasionally and further 29.8% claimed to buy them often or very often. Only a few respondents (2.6%) do

never buy traditional meat products, while 26.5% buy such products rarely or very rarely. Traditional meat products are usually purchased at city markets or at food fairs (about half of the respondents) and less often directly from producers or in the specialised shops (about one fifth of the respondents). Some respondents produce meat products by themselves or they receive them from relatives or friends. Most of the respondents consume traditional meat products few times a week (38.3%) or even a few times a month (36.3%); 19.5% of them eat these products less often, while 6% of the respondents claimed to eat traditional meat products every day.

### Acceptance of health related innovations

Nearly half (48%) of the respondents believe that there are no negative health consequences of traditional meat products consumption. The most often mentioned negative impact of traditional meat products consumption on health such as increased cholesterol (21%), followed by food infections (7.3%) and obesity (4.6%). Some respondents also mentioned diabetes and allergies. About 12% of the respondents believed that consumption of traditional meat products can have negative impact on health but they did not mention what kind of impact.

The research results in Table 2 showed above-average level of acceptance of health related innovations in production of traditional meat products, which is in accordance with generally positive acceptance scores for quality innovations in traditional foods reported by Guerrero et al. (2009) and Kühne et al., (2010). The highest willingness to accept innovations was related to better control of smoking conditions ( $3.3 \pm 1.14$ ) and reduction of salt content ( $3.1 \pm 1.15$ ) followed by reduced fat content ( $3.0 \pm 1.14$ ) and controlled fermentation ( $2.9 \pm 1.12$ ). In some earlier consumer studies, e.g. Bruhn et al. (1992) and Kühne et al., (2010), the highest acceptance rates for health innovations in traditional food products were found for fat replace (e.g. in traditional dairy products) or fat reduction, as well as for salt reduction. In the present study, however, the most highly accepted innovation in traditional meat products was more strict control of smoking conditions. In traditional manufacturing in Croatia meat products are typically smoked in the same chamber where the smoke is generated which can lead to greater deposition of potentially unhealthy substances from the smoke, like polycyclic aromatic hydrocarbons (PAH) on the surface of the products (Andrés et al., 2007). In this sense, the results of the present study may indicate that the Croatian consumers, although it is not explicitly stated, are quite aware of the potential health risks associated with consumption of heavily smoked meats.

**Table 2. Acceptance of health related innovations in traditional meat products**

	Willingness to accept the innovation*	Attitude on a negative impact of the innovation**
Better smoking conditions control	$3.3 \pm 1.14$	$3.2 \pm 1.05$
Reduction of salt	$3.1 \pm 1.15$	$3.4 \pm 1.03$
Reduced fat content	$3.0 \pm 1.14$	$3.4 \pm 0.99$
Controlled fermentation	$2.9 \pm 1.12$	$3.2 \pm 1.04$

\*1 – rejection ... 5 – full acceptance; \*\* 1 - no negative impact ... 5 - high negative impact

The perceived negative impact of innovations on traditional character of meat products was the highest for reduction of fat ( $3.4 \pm 0.99$ ) and salt ( $3.4 \pm 1.03$ ) and the lowest for controlled fermentation ( $3.2 \pm 1.04$ ) and smoking conditions ( $3.2 \pm 1.05$ ). This corroborates previous findings of Kühne et al. (2010) that sensory properties of the traditional food products should not be compromised by innovations. More than one third of the respondents (36.7%) claimed that they would increase consumption of traditional meat products if produced with the mentioned innovations that would result in potentially decreased negative influence of traditional meat products on their health. Furthermore, 22.7% of the respondents declared that such innovations would not change their consumption behaviour while a majority of the respondents (40.6%) are not sure about their reaction on such innovations.

### Influence of sociodemographic and consumption frequency on acceptance of health related innovations

With regards to respondents' socio-demographic features earlier studies have already shown that females and urban consumers are generally more prone to accept innovations in the traditional foods (e.g. Guerrero et al., 2009; Kühne et al., 2010). The present results (Mann-Whitney U test, not shown) also revealed a higher acceptance of fat reduction and higher willingness to increase a consumption of healthier traditional meat products among females ( $p=0.032$ ), while age, education level and income had no influence on the investigated parameters ( $p>0.05$ ). In addition, some health related innovations; e.g. fat reduction ( $p=0.003$ ) and the use of starter cultures ( $p=0.05$ ) were generally less acceptable among respondents with a high consumption frequency of traditional meat products.

### CONCLUSION

The results of this preliminary study indicated controlled smoking conditions as the best accepted health related innovation of traditional meat products by Croatian consumers with the least negative impact

on perceived traditional character of product. In general terms, women were more likely to accept some of the investigated innovations and consequently to increase their consumption of innovate products. However, the most regular consumers of the traditional meat products were less open towards innovations which may pose a challenge to further improvements in this traditional food sector.

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