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Effect of information about animal feeding on consumer acceptability of sausages from *Turopolje* pig breed

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Introduction (1)

- economic valorisation of specific food products of rare and endangered breeds



- strengthen their conservation processes
- **make them** a resource for a local livestock production and sustainable development

(Verrier et al, 2005; Lauvie et al., 2011)



- **Local pig breeds often characterised by:**
 - small population size
 - the absence of specific selection programs
 - often reared in traditional production systems (typically low input extensive systems) linked to a specific environment
 - rarely self-sustainable due to the absence of **typical food products** with an extra added value

(Bozzi and Corvetti, 2013)



Introduction (3)

- to preserve such indigenous pig breeds in a more sustainable way



- necessary to offer to the market specific food product from these breeds that will be accepted and appreciated by consumers



- ***Turopolje* pig (TP)**
 - local breed from Central Croatia
 - one of the oldest European pig breeds
 - medium-sized, primitive-type, fatty breed
 - important food source in the past
 - modest rearing requirements, resilience and good adaptation to local marsh meadows and oak forests

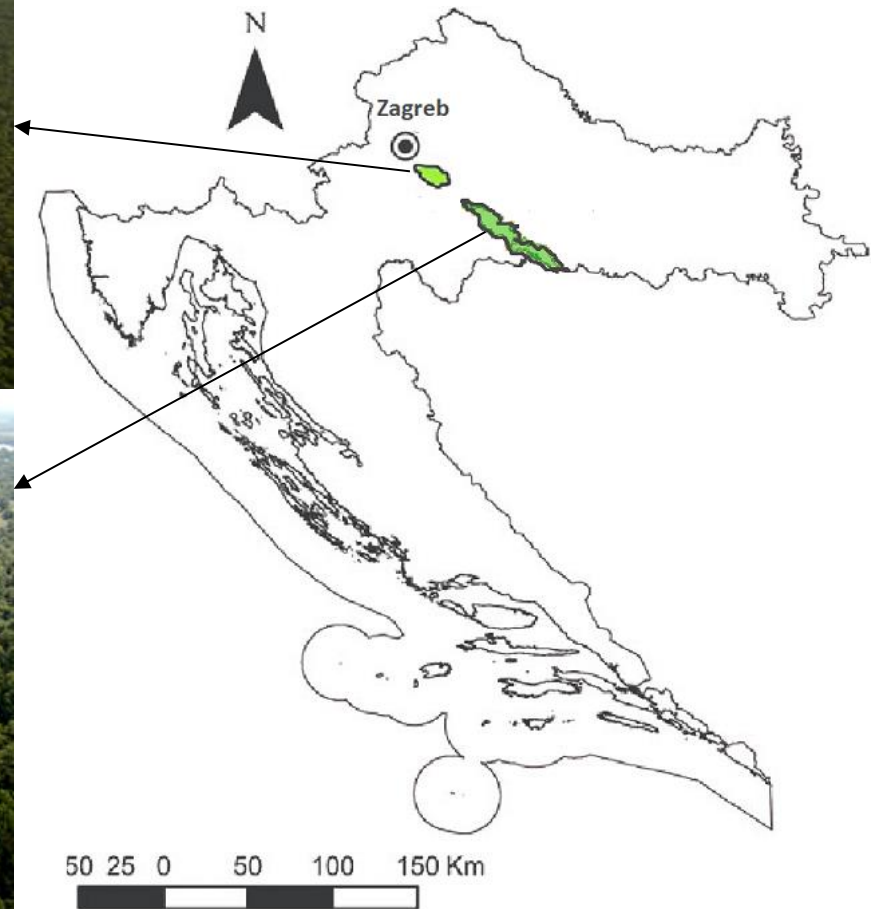




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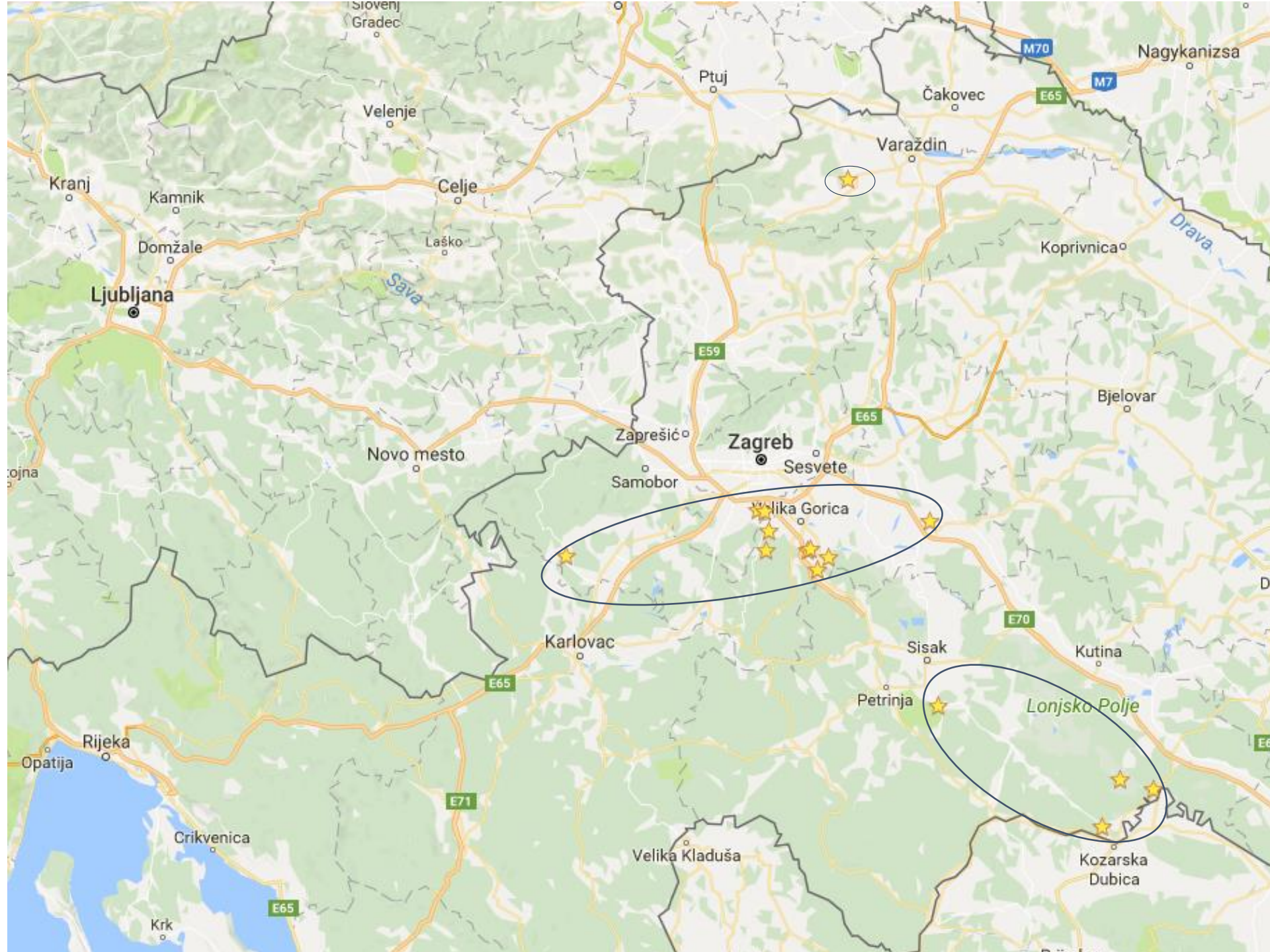


- Nowadays significantly reduced interest in **TP** breed



- drastic decrease in the population size (a population of only 132 sows and 30 boars kept on 16 farms, 2015)
- conservation mainly maintained through state subsidies to farmers
- no marketing strategy





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- **TREASURE** - one of the main challenges:
 - to enhance quality and health benefits of **traditional pork products** from local pig breeds
 - to provide information about the **consumers' acceptability** of these products



- **Todays consumers:**
 - care about food naturalness, authenticity and origin, tradition and health
 - traditional characteristic of a product, including indigenous breeds - highly appreciated

(Fenger et al., 2015; Albezio et al., 2014)



- **In order to be successful on the market**
 - necessary to offer a product with additional property that will increase consumer value of a product
 - such properties (e.g. indigenous breed, traditional production system and feeding resources) can be used as a very powerful differentiation tool in marketing of products of local breeds



Aim of the study



- to examine consumers' acceptance of dry fermented sausages from **TP** breed
- to investigate the effect of information about pig feeding (conventional vs. traditional acorn feeding) on hedonic ratings and purchase probability of dry fermented sausages



• Products

- samples from 2 batches of dry fermented sausages produced from outdoor reared TP pigs (from WP2.5 feeding trial)
- identical processing technology and recipe, only difference - the finishing diet of pigs used :
 - standard feed mixture (**conventional-fed group or CF**).
 - feed mixture supplemented with *Quercus robur* L. acorn - traditionally used in TP diet (**acorn-fed group or AF**).



Material and Methods

- **Description of the sample**

- 135 meat consumers interviewed at:
 - a local fair near Zagreb (84 respondents)
 - the Faculty of Agriculture in Zagreb (51 respondents)

		(N)	% of the respondents
Gender	male	69	51%
	female	65	49%
Age	Up to 30 years	33	24%
	30-45 years	42	33%
	45-60 years	45	31%
	60+ years	16	12%
Education	Primary school	7	5%
	Secondary school	57	42%
	University education	71	53%
Place of growing up	Rural	67	51%
	Urban	64	49%
Place of living	Rural	50	40%
	Urban	76	60%
Average monthly family income	Low	5	4%
	Medium	93	69%
	High	28	21%
	Very high	8	6%

- **Consumer test**

- **Survey with tasting**

- questions regarding

- frequency of sausage consumption
- familiarity with the TP breed
- importance of pig feeding technology and practices
- attitudes on traditional way of rearing



- **Consumer test**

Sensory test – to measure the effect of information about pig feeding (CF vs. AF) on consumer acceptability and probability of buying the sausages

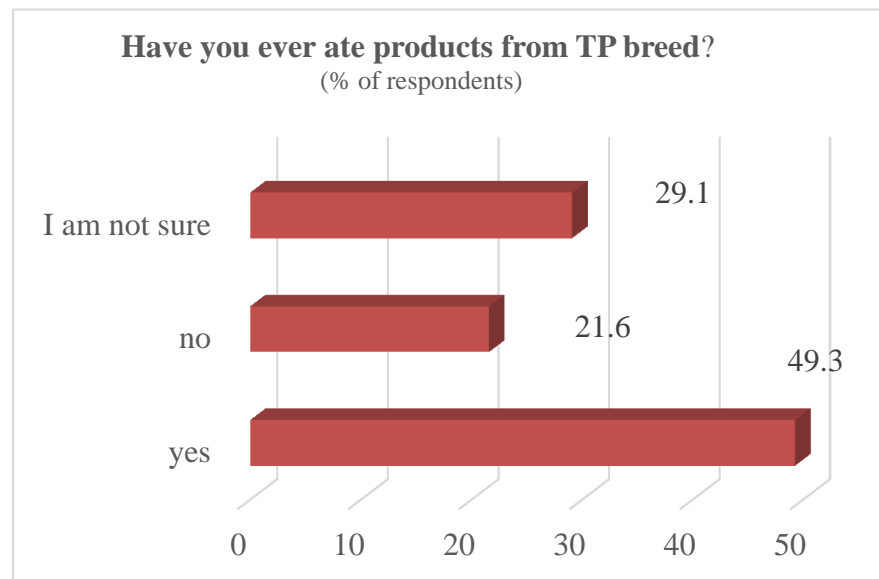
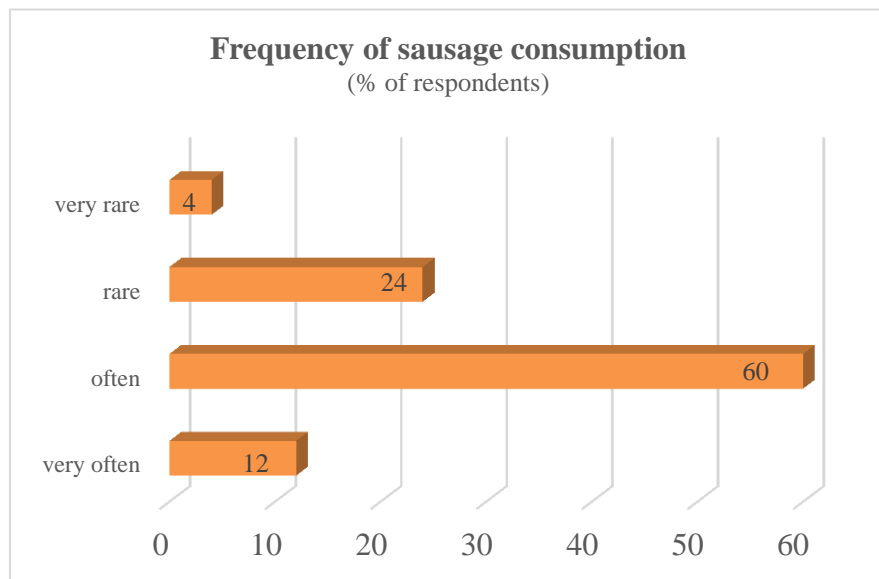
- a three-step procedure: evaluation of
 - (1) perceived/blind preference
 - (2) expected preference
 - (3) actual/informed preference





• Consumption habits and attitudes

- most of the respondents (86%) - eat meat at least 3-5 times a week
- 96% of the respondents have heard of TP breed



- **Consumption habits and attitudes**
 - two thirds of the respondents (68%) consider pig production technology and feeding an important factor when deciding to buy meat and meat products
 - 90% of the respondents - think that natural feedstuff (grazing, acorn, etc.) is better for consumer health compared to industrial feed mixtures
 - 94% of the respondents - agree that meat from pigs reared in traditional production systems is of higher quality compared to meat from pigs from conventional intensive production



• Consumer acceptability test (1)

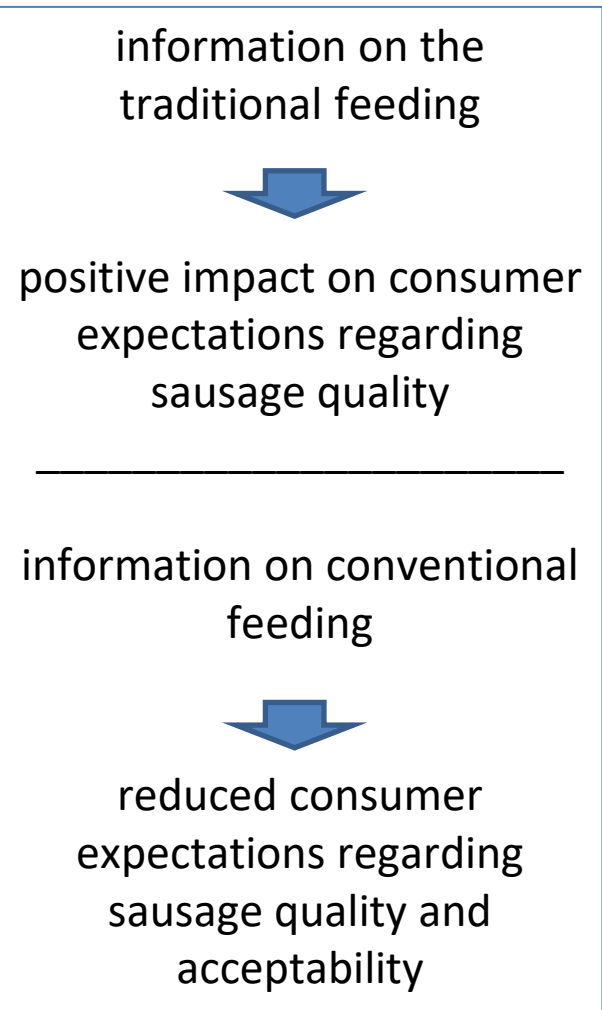
Ratings ^a		CF sausage	AF sausage	Average difference	P-value ^b
Blind test (B)		4.09 ± 0.842	3.96 ± 0.877	0.13	0.152
Expectancy test (E)		3.59 ± 0.972	4.45 ± 0.740	-0.86	<0.001
Informed test (I)		3.94 ± 0.817	4.29 ± 0.921	-0.35	0.001
E-B	Average difference	-0.50 Pos. disconf. ^c	0.49 Neg. disconf. ^d		
	P-value ^b	<0.001	<0.001		
I-B	Average difference	-0.15	0.33 Assimilation		
	P-value ^b	0.079	<0.001		
I-E	Average difference	0.35	-0.16		
	P-value ^b	<0.001	0.044		

^a1 = "I dislike it very much" to 5 = "I like it very much", ^b paired t-test,

^c positive disconfirmation, ^d negative disconfirmation

The expected acceptability for the AF sausage was higher compared to the blind test acceptability → **negative disconfirmation** (i.e. the product is worse than expected).

The blind acceptability for CF sausage is higher than expected → **positive disconfirmation** (i.e. the product is better than expected)



- discrepancies between expected (E) and perceived (B) product quality can affect the acceptability of product during the informed (I) test indicating the actual preferences, when expected and experienced qualities are integrated
- **assimilation effect** - either when expectations are high but sensory quality of the product is low (i.e., negative disconfirmation) or when expectations are low but sensory quality is high (i.e., positive disconfirmation), the perceived acceptability will assimilate the (higher) level of the expectation and **judgment will move toward expectations.**

(Deliza and MacFie, 1996; Cardello and Sawyer., 1992)



• Consumer acceptability test (2)



Ratings ^a		CF sausage	AF sausage	Average difference	P-value ^b
Blind test (B)		4.09 ± 0.842	3.96 ± 0.877	0.13	0.152
Expectancy test (E)		3.59 ± 0.972	4.45 ± 0.740	-0.86	<0.001
Informed test (I)		3.94 ± 0.817	4.29 ± 0.921	-0.35	0.001
E-B	Average difference	-0.50 Pos. disconf. ^c	0.49 Neg. disconf. ^d		
	P-value ^b	<0.001	<0.001		
I-B	Average difference	-0.15	0.33 Assimilation		
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I-E	Average difference	0.35	-0.16		
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^a1 = "I dislike it very much" to 5 = "I like it very much", ^b paired t-test,

^c positive disconfirmation, ^d negative disconfirmation

However, the information on acorn feeding was not completely effective in reducing the difference between expectations and actual perception (I-E) ➡ **incomplete assimilation**

Both, information about pigs diet and sensory attributes of product had an impact on actual preferences and sensory evaluation remains very important when consumers judge the product knowing the information about animals diet

The respondent preferences for AF sausages



moved toward the expectations when information on pig diet was given (I-B)



assimilation effect occurred

On contrary – information about conventional feeding did not influence consumers' hedonic ratings



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- **Probability of purchase**


Ratings ^a		CF sausage	AF sausage	Average difference	P-value ^b
Blind test (B)		3.84 ± 1.04	3.66 ± 1.10	0.18	0.093
Expectancy test (E)		3.47 ± 1.01	4.32 ± 0.86	-0.85	<0.001
Informed test (I)		3.76 ± 0.97	4.15 ± 0.94	-0.39	0.001
E-B	Average difference	-0.37	0.66		
	P-value ^b	<0.001	<0.001		
I-B	Average difference	-0.08	0.49		
	P-value ^b	0.332	<0.001		
I-E	Average difference	0.29	-0.17		
	P-value ^b	0.009	0.025		

^a1 = “I would definitively not buy it” to 5 = “I would definitively buy it”

^b paired t-test

All results in line with the results of the consumer acceptability test



- **information about traditional feedstuffs (i.e. acorn) in pig diet**
 - can affect consumer perception of meat products from local breeds and increase their affinity towards them
- 
- can be used as an influential marketing tool for distinguishing meat products from local pig breeds from other meat products.
 - **the use of traditional acorn-feeding in TP breed should be emphasized in marketing strategies**
 - it may enhance the consumer's motives for consumption and purchase of TP products - a critical prerequisite for more sustainable management of this breed in the future



Thank you for your attention!



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