



**CONGRESS  
OF HALAL  
QUALITY**



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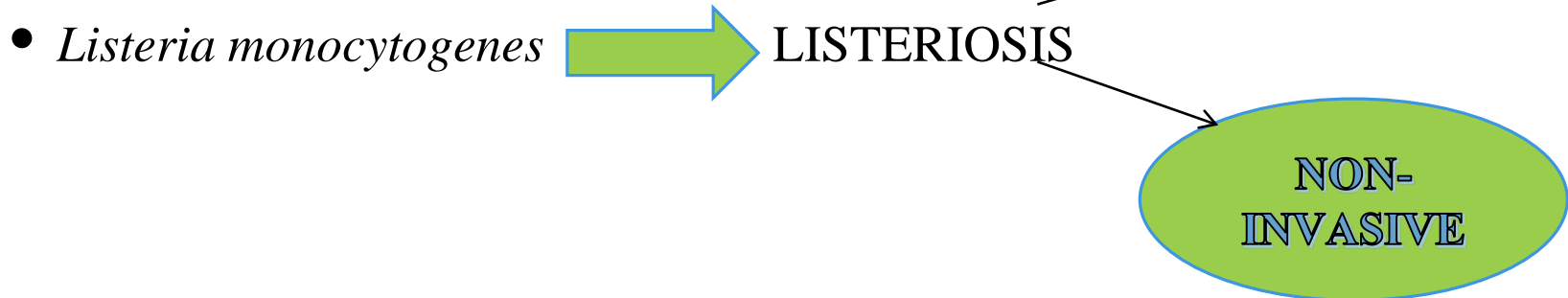
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# MICROBIOLOGICAL CORRECTNESS OF FISH WITH REFERENCE TO *LISTERIA MONOCYTOGENES* IN THE CONTEXT OF IMPORTANCE TO HALAL PRODUCTION

## INTRODUCTION



*Listeria monocytogenes* - ubiquitous bacterium in nature

- Transmitted through food  can be dangerous to human and animal health (FDA,USDA,FSIS)



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## INTRODUCTION

- Cross-contamination - one of the basic ways of contamination of final products in production chains
- HALAL  permitted in islam
- HARAM  forbidden in islam
- Halal standards dictate that food must meet all regulations on health, hygiene and sanitary correctness, that it does not contain ingredients that Muslims are forbidden to consume
- Halal food must not contain pathogenic microorganisms

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- MATERIAL AND METHODS

- Rainbow trout (*Oncorhynchus mykiss*)

- Table 1. Number of rainbow trout samples according to facility type and sampling season

Number of samples according to object type and sampling season		
Number of samples/season	Facility A (Halal/HACCP)	Facility B (without Halal/HACCP)
Number of samples/spring-summer	(n=80)	(n=80)
Number of samples/autumn-winter	(n=80)	(n=80)
<b>Total</b>	<b>(n=160)</b>	<b>(n=160)</b>

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- RESEARCH METHODS
- **Preparation of samples:** BAS EN ISO 6887-1:2005 i 6887-3:2005 (ISO 6887, 2005)
- **Isolation and detection *Listeria monocytogenes* :** Horizontal method for the detection and counting of *Listeria monocytogenes* – Part 1 (ISO 11290-1 2005)
- Incubation: 48-72 hours/37°C

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## RESULTS

Table 2. Representation and seasonality of *Listeria monocytogenes* in samples of edible rainbow trout in a facility with implemented Halal/HACCP standards (facility A)

Location/number of samples	Number of positive samples (%)	
	Spring-summer	Autumn-win
Fish farms (n=15)	0 (0.00)	0 (0.00)
Containers with ice (n=15)	0 (0.00)	0 (0.00)
Slaughter and evisceration line (n=20)	2 (10.00)	0 (0.00)
Fish from the cache ready for transport (n=15)	0 (0.00)	0 (0.00)
Frozen fish (n=15)	0 (0.00)	0 (0.00)
Total (n=80)	2 (2.5)	0 (0.00)

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## RESULTS

Table 3. Representation and seasonality of *Listeria monocytogenes* in samples of edible rainbow trout in a facility without implemented Halal/HACCP standards

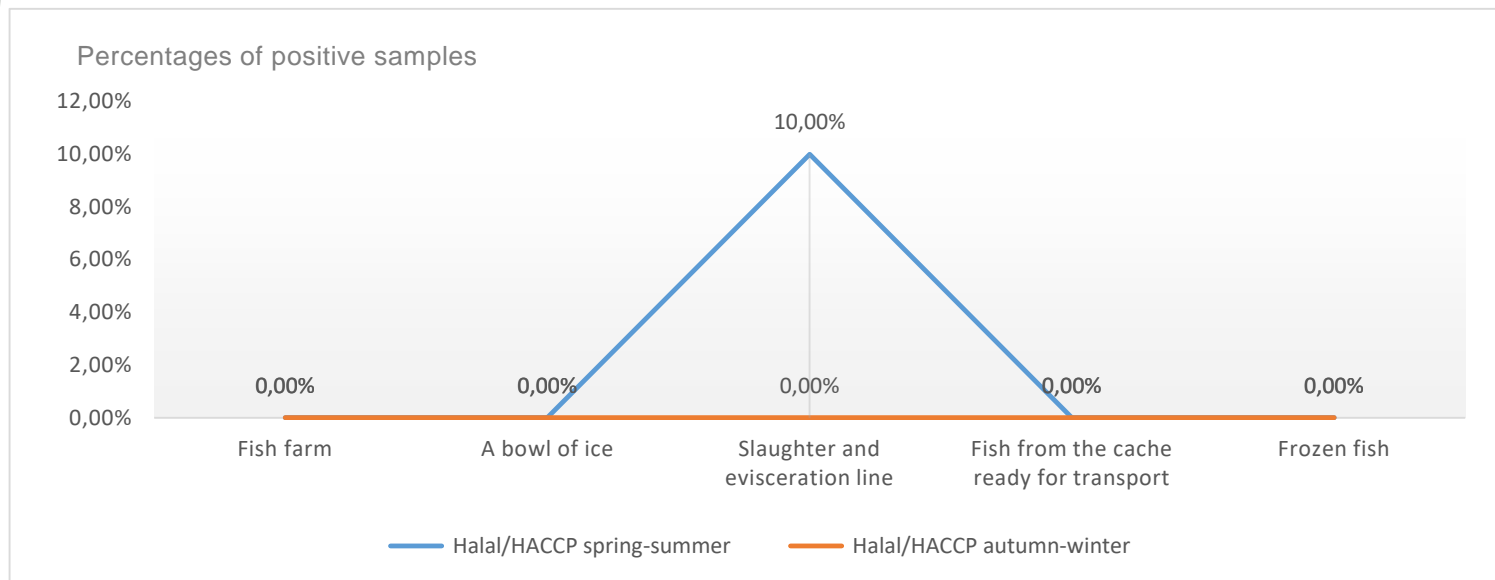
(facility B)

Location/number of samples	Number of positive samples (%)	
	Spring-summer	Autumn-wint
Fish farms (n=15)	0 (0.00)	1 (6.66)
Containers with ice (n=15)	1 (6.66)	0 (0.00)
Slaughter and evisceration line (n=20)	3 (15.00)	1 (5.00)
Fish from the cache ready for transport (n=15)	0 (0.00)	0 (0.00)
Frozen fish (n=15)	1 (6.66)	0 (0.00)
Total (n=80)	5 (6.25)	3 (3.75)



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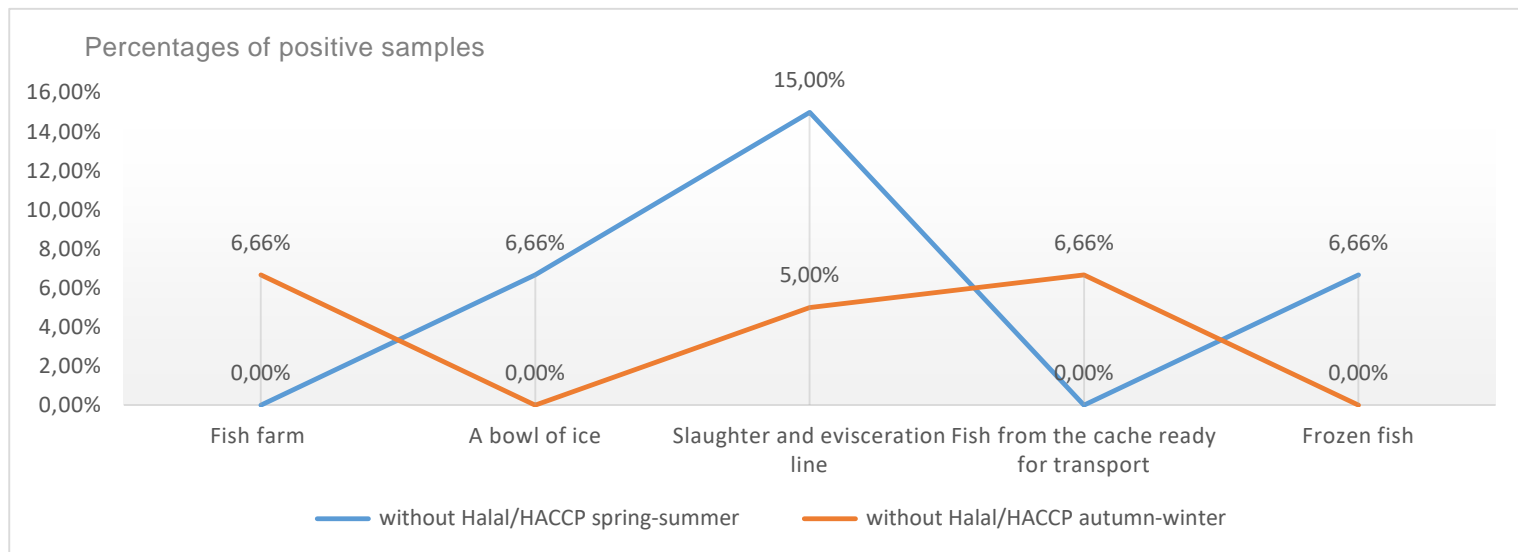
## RESULTS



Graph 1. Comparative presentation of the results of the presence and seasonality of *Listeria monocytogenes* in rainbow trout samples in a facility with implemented Halal/HACCP (facility A)

# MICROBIOLOGICAL CORRECTNESS OF FISH WITH REFERENCE TO *LISTERIA MONOCYTOGENES* IN THE CONTEXT OF IMPORTANCE TO HALAL PRODUCTION

## RESULTS



Graph 2. Comparative presentation of the results of the presence and seasonality of *Listeria monocytogenes* in rainbow trout samples in a facility without implemented Halal/HACCP (facility B)

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## RESULTS

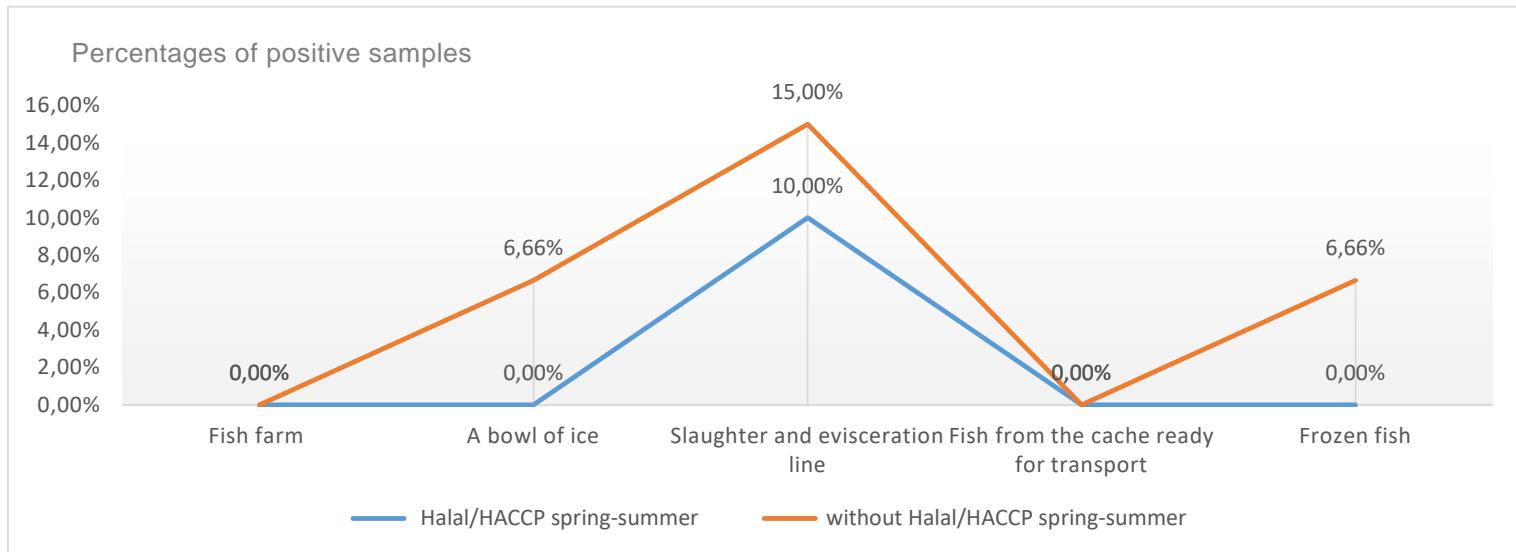


Chart 3. Comparative presentation of the results of positive samples for *Listeria monocytogenes* in facilities with and without implemented Halal/HACCP in the spring-summer season (facility A, B)

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## RESULTS

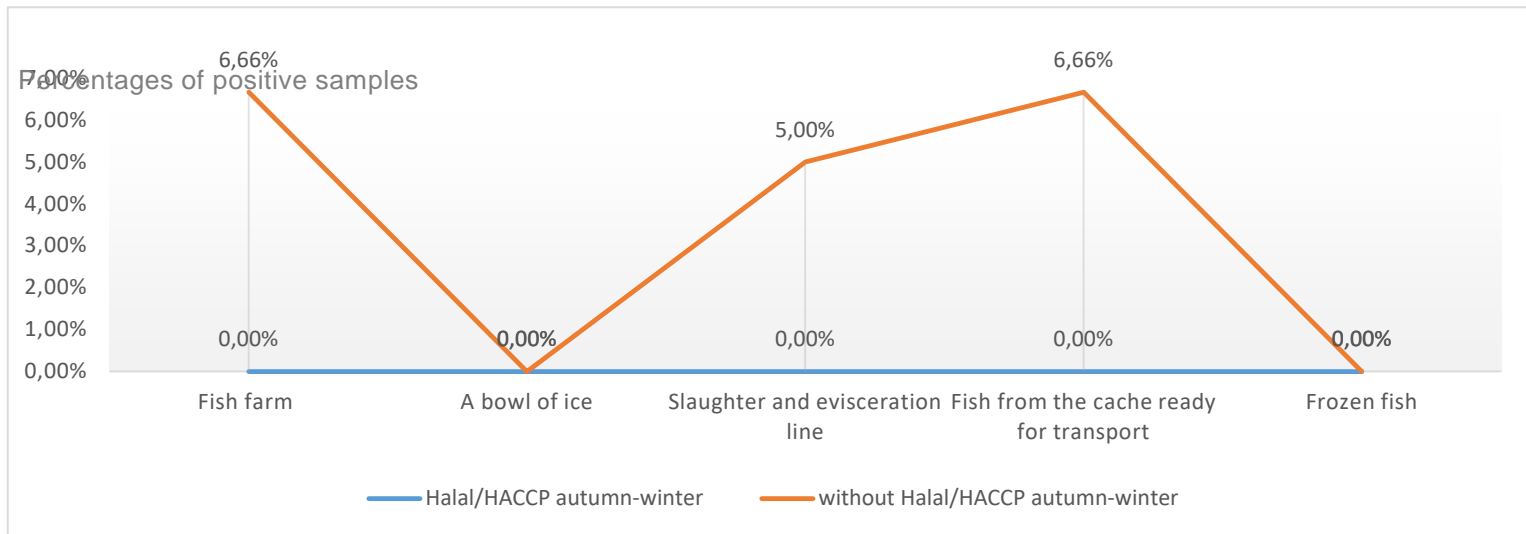


Chart 4. Comparative presentation of the results of positive samples for *Listeria monocytogenes* in facilities with and without implemented Halal/HACCP in the autumn-winter season (facility A, B)

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## CONCLUSION

1. The research confirmed the presence of *Listeria monocytogenes* in samples of rainbow trout (*Oncorhynchus mykiss*) from ponds and processing facilities, which indicates the possibility of contamination of the final products.
2. Positive samples at the slaughter and evisceration line indicate the obligation of constant supervision and implementation of hygienic and sanitary measures in accordance with Halal/HACCP standards.
3. Fish contaminated with pathogens, such as *Listeria monocytogenes*, is not allowed for human consumption due to its harmfulness to human health, and therefore such fish does not meet the criteria of a halal product.



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**THANKS**