THE ORGANOLEPTIC EXAM OF COOKED HIGH PRESSURE PROCESSED AND COOKED UNTREATED FISH FILLETS

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INTRODUCTION

Rainbow trout (*Oncorhynchus mykiss*)

- very appreciated over the last years due to its dietary quality
- low-fat, sweet water fish, hard-fighting game fish

Source for a healthy food diet:

- excellent organoleptic properties
- tender flesh
- high levels of vitamins, antioxidants, omega-3 fatty acids

INTRODUCTION

- commercial value has seriously grown in the late 19th century worldwide
- very perishable > potential microbiological risks for the consumers

High pressure processing (HPP)

+ minimum effect on the flavor, nutrients, vitamins, other nutritional values of foods

AIM AND OBJECTIVES

The aim of this study was to evaluate the effects of an HPP pre-treatment on the sensorial quality of cooked rainbow trout fillets in comparison with untreated cooked fillets, while including the advantage of shelf-life extension.

- comparisons between the untreated and HPP treated fillets;
- description of texture, flavor (odor and taste) and appearance.

MATERIALS AND METHODS

FISH SAMPLES

- fresh skinless rainbow trout fillets from an aquaculture farming system (Osnabrück, Germany)
- transported on ice to the German Institute of Food Technologies (DIL) (Quakenbrück, Germany)
- fillets were portioned in half
- each aliquot of the fillet was placed in a clean, dry polyethylene bag, vacuum-sealed
- HPP in 3-5 h after slaughtering and filleting

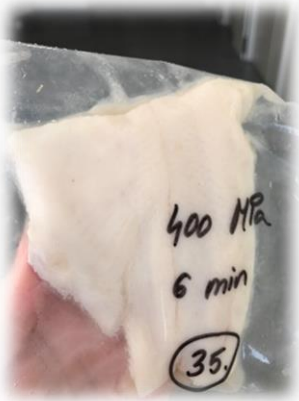
HPP TREATMENT

- pressure treatment in a 55 L capacity high-pressure vessel HIPERBARIC (Burgos, Spain)
- the transmitting medium used was water
- 6 °C - maximum temperature of the samples during pressure treatment

HPP TREATMENT

First type of samples:

- cylindrical loading container > 400 MPa at a rate of 150 MPa/min > holding time 6 min



Second type of samples:

- control samples (untreated samples)

Storage at 4.0 ± 0.1 °C until the sensorial exam was performed

THE TRIANGLE TEST WITH THERMALLY PROCESSED HPP TREATED AND CONTROL SAMPLES

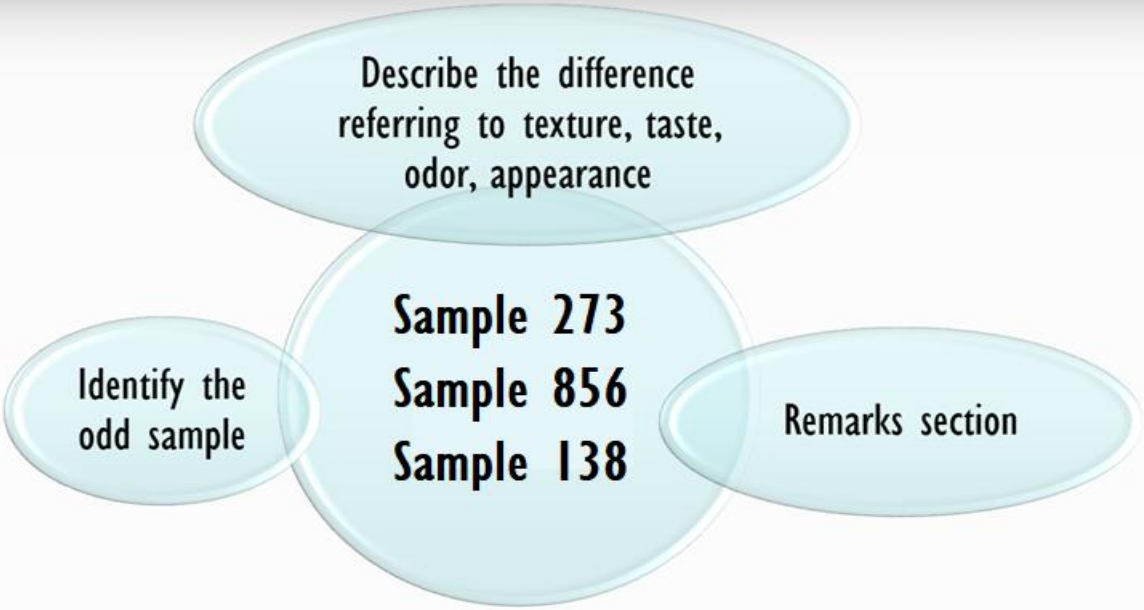
- 30 trained panelists participated in the test (ISO 4120, 2004)
- samples baked in aluminium foil at 170°C for 10 min

Each panelist was presented with 3 coded samples:

✓ 2 HPP treated samples at a pressure level of 400 MPa/6 min (label 273 and 856)

✓ control sample (label 138)

REQUIREMENTS FOR PANELISTS



- the correct answers were counted and compared to the values of the significance level (α) in the table corresponding to the chapter Test Evaluation from (ISO 4120, 2004).

RESULTS AND DISCUSSIONS

- 20 out of 30 panelists identified correctly the odd sample 138 (untreated and baked fillet)
- significance level 99,9%
- 27 panelists observed differences in texture
- majority - untreated sample (138) was softer than the HPP treated samples (273,856)
- significance level of 99%

RESULTS AND DISCUSSIONS

- minimal differences in flavor consisting in taste and odor;
- 12 panelists noticed a difference in smell;
- 8 described less intensive odor for the control sample;
- similar appearance for all of the cooked samples.

- remarks - shape and uniformity of the samples
- difficulty of cutting trout fillets homogenously

CONCLUSIONS

- the panelists differentiated the untreated sample from the others mainly on texture criteria;
- the softening produced after the HPP was not encountered in the cooked product;
- this aspect represents an improvement obtained by using the HPP pre-treatment;
- the untreated sample was softer and more breakable than the HPP treated sample;
- no significant differences were detected concerning flavor;
- the untreated sample had less intensive odor (less than a third of the participants);
- more aroma is usually preferred by consumers and therefore this aspect can be taken as a positive remark.

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THANK YOU!

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