



HydroFresh
NEBUSYSTEM FOGGER

TESTIMONIAL EVIDENCE

Studies on Weight Loss in Fresh Fish

WEIGHT LOSS STUDIES IN FRESH FISH WITHOUT NEBULIZATION SYSTEM

POINT OF SALE: SPANISH SUPERMARKET WITH MORE THAN 350 POINTS OF SALE

DATE: Thursday, June 7, 2019

SCALE: METTLER Toledo BC-H22 (Weights expressed in grams)

FISHMONGER'S DISPLAY CABINET MEASUREMENT: 8 meters

SUPERMARKET INTERIOR TEMPERATURE: 22°C

SPECIES	9 a.m.	10 a.m.	%	11 a.m.	%	12 p.m.	%	1 p.m.	%	3 p.m.	Dif. Gr	Dif. %
HAKE	1.675	1.650	-1,49	1.635	-0,91	1.625	-0,61	1.620	-0,31	1.610	-65	-3,88
LOTTE	1.695	1.665	-1,77	1.650	-0,90	1.645	-0,30	1.640	-0,30	1.630	-65	-3,83
SALMON	2.255	2.210	-2,00	2.195	-0,68	2.180	-0,68	2.175	-0,23	2.165	-90	-3,99
BAR	365	360	-1,37	360	0,00	355	-1,39	355	0,00	350	-15	-4,11
DAURADE	325	320	-1,54	315	-1,56	315	0,00	310	-1,59	310	-15	-4,62

Average
weight loss: **-4,09**

TESTIMONIAL EVIDENCE

WEIGHT LOSS STUDIES IN FRESH FISH WITH NEBULIZATION SYSTEM

POINT OF SALE: SPANISH SUPERMARKET WITH MORE THAN 350 POINTS OF SALE

DATE: Friday, June 8, 2019

SCALE: METTLER Toledo BC-H22 (Weights expressed in grams)

FISHMONGER'S DISPLAY CABINET MEASUREMENT: 8 meters

SUPERMARKET INTERIOR TEMPERATURE: 22°C

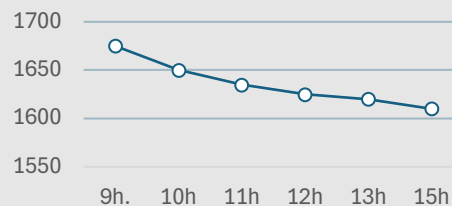
SPECIES	9 a.m.	10 a.m.	%	11 a.m.	%	12 p.m.	%	1 p.m.	%	3 p.m.	Dif. Gr	Dif. %
HAKE	1.425	1.435	0,70	1.435	0,00	1.430	-0,35	1.430	0,00	1.430	5	0,35
LOTTE	1.745	1.755	0,57	1.755	0,00	1.750	-0,28	1.745	-0,29	1.745	0	0,00
SALMON	2.610	2.620	0,38	2.620	0,00	2.615	-0,19	2.615	0,00	2.615	5	0,19
BAR	465	465	0,00	465	0,00	465	0,00	465	0,00	465	0	0,00
DAURADE	420	420	0,00	420	0,00	420	0,00	420	0,00	420	0	0,00

Average
weight loss: **0,11**

EVAPORATIVE WEIGHT LOSS COMPARISON CHARTS

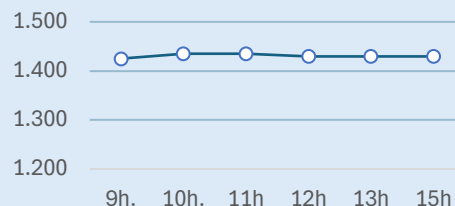
NO NEBULIZATION

MERLU



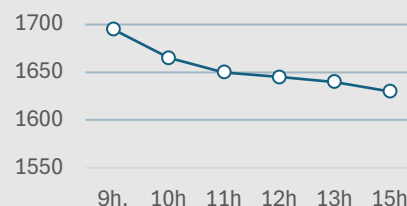
WITH NEBULISATION

MERLU



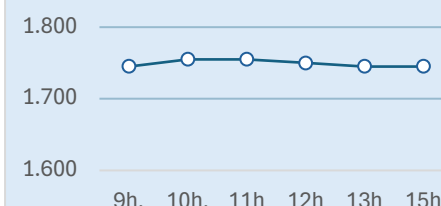
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LOTTE



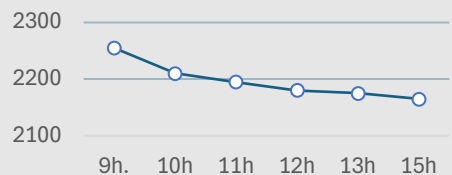
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LOTTE



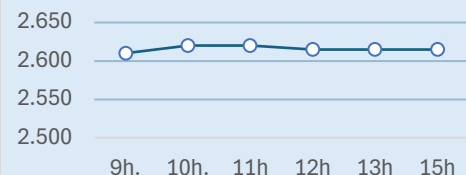
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SAUMON



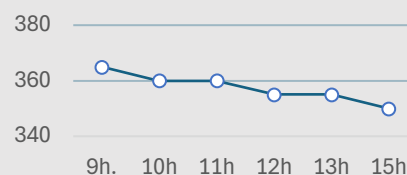
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SAUMON



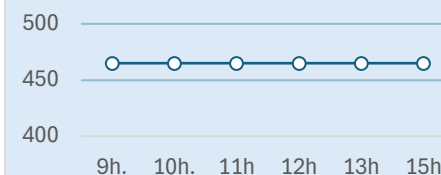
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BAR



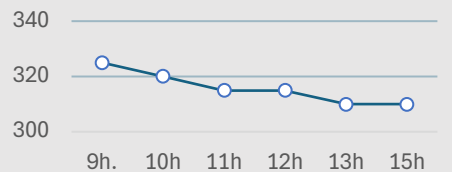
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BAR



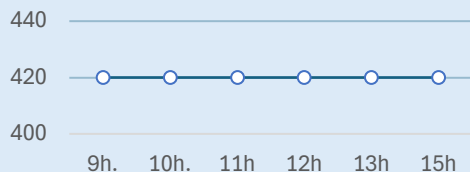
NO NEBULIZATION

DAURADE



WITH NEBULISATION

DAURADE



LOCATION:

This study was carried out in a supermarket located in Vilanova i la Geltrú (Barcelona), belonging to a Spanish chain with more than 350 points of sale.

STUDY DESIGN:

- The study was carried out on an 8-linear metre fresh fish stall on a 10 cm thick ice bed.
- The temperature inside the outlet was 22°C.
- The scale used by the various weighings is of the METTLER brand, Toledo BCH22 model.

NEBULIZATION EQUIPMENT:

The nebulization equipment used for the study is the "**HydroFresh**" model, **HAF12**, equipped with "PLENUM" diffusers

FRESH FISH SPECIES ANALYSED:

- HAKE
- LOTTE
- SALMON
- BAR
- DAURADE

COURSE OF THE STUDY:

On Thursday, June 7, the study was carried out WITHOUT a nebulization system.

On a part of the counter, the five species are separated, the weights of which will have to be recorded. At 9 a.m., the initial weight of each species is measured and recorded, and then a new weighing is carried out **every hour**. The final weight is recorded at 3 p.m., after **six hours of exposure**.

On Friday 8 June, the study is carried out WITH the "HydroFresh" nebulisation system, using new fresh fish, but of course from the same species. The entire hourly weighing procedure of the previous day is repeated identically.

CONCLUSION OF THE STUDY

The integration of the "**HydroFresh**" nebulization system in the control of fish weight loss has proven to be completely effective and cost-effective for the comb. **With the "HydroFresh" nebulization system**, after six hours of exposure, no weight loss was observed for any of the species, while on the day of the study **without nebulization**, considerable weight loss was observed for all species. The average loss **without a nebulization system** is greater than **4%**.

The most significant loss occurs during **the first hour of exposure**, as the species move from the storage coolers to the point of sale, where the ambient temperature is 22°C. The lower part of the product rests on a bed of ice, while the upper part is exposed to room temperature. Due to this thermal contrast between the cold room and the store display, the fresh product loses water more quickly.

Based on this data, and knowing that almost **50%** of the total loss occurs during the first hour of exposure, we recommend that, as soon as the ice bed is prepared on the stall and the different species are set up for sale, the "**HydroFresh**" nebulization system is already in operation.

In the conditions of sale of fish **without nebulization**, the species are subjected to very high ambient temperatures. As a result, fresh fish loses water as well as certain nutrients, which leads to a degradation of its organoleptic characteristics and, consequently, a product of lower quality for the consumer.

This study shows that with the "**HydroFresh**" nebulization system, the surface of the fish remains cool and its temperature is better controlled. Nebulization offers better quality to the product by keeping it fresher and delaying its decomposition, thanks to the saturation of the air with moisture. The consumer thus receives a product that retains all its qualities and properties.

Visually, the differences are obvious. **Without nebulisation**, the fish very quickly takes on a "dry" appearance, while with **the "HydroFresh" nebulisation**, the appearance is clearly that of a "fresh" product, with a shiny surface.

This demonstration proves that the reduction in weight loss is directly related to the improvement of the moisture content of fresh fish, which prevents its evaporation and, consequently, its degradation and decomposition.

In addition to the reduction in weight loss observed in this study, there are **two extremely important variables** to consider when calculating the damping of the nebulizer system:

1. REDUCTION OF WASTE LOSS

Fresh fish **without nebulization** decomposes and evaporates its water more quickly, which leads to weight loss as well as an alteration of its organoleptic characteristics: freshness, color, smell, flavor, texture.

With the "**HydroFresh**" **nebulisation system**, the fresh product is properly preserved, its temperature is maintained and its evaporation – and therefore its decomposition – is prevented.

As a result, the shelf life of the fresh product is extended and the **loss through evaporation and waste is significantly reduced**.

2. INCREASED SALES

With the "HydroFresh" **nebulization system**, we keep the fish fresh by retaining its entire shiny surface. It's not just about a fresher look: **"the product is actually fresher."**

From a visual point of view, consumers perceive a fresher, better quality, less degraded product and, therefore, more attractive to purchase.

Thanks to the visual appearance we achieve by nebulizing fresh fish, **sales increase significantly.**

As a result, with the "**HydroFresh**" nebulization system, we **avoid weight loss** due to the conditions of exposure of the fish, we preserve its organoleptic characteristics and, therefore, we **reduce the loss by waste** by extending the shelf life of the fresh product. In addition, thanks to the improvement of the visual appearance, **we also increase sales.**