

***Updating of analytical data for the nutritional labelling of traditional fish (Dried-salted haddock, dried-salted Pacific Cod)***

***FHF Project n. 901307***

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## Summary

Analysis of dried salted pacific cod and haddock was complemented with desalting trials in order to update the nutritional database of clipfish products. Nutritional labels in compliance to new labelling standards in Brazilian markets were laid down for use by the industry.

## Sammendrag

Næringsinformasjon er utført i henhold til merkingskriterier for klippfisk (stillehavtorsk og hyse), ved ANFACO-CECOPESCA sine laboratorier. Det er også foreslått næringsinnhold til klippfiskindustrien på etiketter i samsvar med det nye regelverket i Brasil som trådte i kraft oktober 2022.

## 1. Introduction

During the period 2017-2019 FHF project n. 901307 addressed the update of the nutritional databased of traditional seafood products from the Norwegian industry. Due to changes in the Brazilian labelling standards that have been recently put into force, it has been necessary to extend the analytical database, including additional information regarding the nutritional value of ready-to-eat desalted products. Moreover, it has been appointed by the industry that additional clipfish species like haddock (*Melanogrammus aeglefinus*) and Pacific Cod (*Gadus macrocephalus*) should also be characterized.

### Project organization

**Responsible organization:** ANFACO-CECOPESCA (*Asociación Nacional de Fabricantes de Conservas de Pescados y mariscos*) [anfaco@anfaco.es](mailto:anfaco@anfaco.es) - phone: +34 986 469 303. Vigo (Spain).

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### Reference group.

**Svenn Sperre** - Nils Sperre AS

**Torgeir Bjørge** - Mathias Bjørge AS

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## 2. Objectives

The basic objective is to complete required data to appropriately comply with nutritional labelling regulations, and specifically the Brazilian standards.

1. Extend the nutritional database to clipfish products using haddock and Pacific cod as raw materials.

2. To perform desalting trials in accordance to agreed criteria from the Norwegian industry, completing the analytical database with ready-to-eat desalted products.
3. To disseminate the results with the industry.

### 3. Project execution

The project basically consisted in gathering the materials from participant companies, shipping to ANFACO-CECOPESCA facilities, carrying out the analytical activities and reporting results.

#### Sampling

The collection of the fish samples was coordinated by FHF and the materials were shipped by air-freight, dispatched and received at ANFACO-CECOPESCA facilities in good conditions. Clipfish were packed in 3 carton boxes as detailed in Table 1, and preserved at 2-3 °C until processing for analysis.

Table 1: Detail of the clipfish materials received at ANFACO-CECOPESCA.

	Provider	Total (kg)	Pieces	Piece (Kg)
<i>Gadus macrocephalus</i>	Company 1	19,5	7	2,786
<i>Gadus macrocephalus</i>	Company 2	25,0	9	2,778
<i>Melannogramus aeglefinus</i>	Company 3	17,6	24	0,733

#### Sample preparation for nutritional analysis.

The number of samples for analysis was 16 for each species. Some of the haddock pieces were aggregated making up a composed sample due to the reduced size of the pieces. Eight samples were analyzed per day until completing 32 analyses in four consecutive days. Samples were withdrawn from the carton boxes and assigned an internal code.



Figure 1: Clipfish pieces codified for analysis.

In order to get the laboratory samples, the pieces were sectioned as defined in the Portuguese regulation Dec. Lei 25/2005. Crosswise sections of 20 mm, separated every 40 mm, from pectoral to anal fins were obtained using a mechanical bandsaw. The 20 mm sections were included in codified plastic bags, sealed and transferred to laboratory for analysis. The remaining 40 mm sections from each fish were vacuum packed in sealed plastic bags and preserved in the cool chamber until the start of desalting trials.



Figure 2: Dec. Lei 25/2005 cross-sectional method. Samples for analysis and desalting.

Since the purpose of the analysis is to define the nutritional value of the materials, skin and bone were removed from the 20mm sections, before mechanical grinding to obtain the laboratory sample only from the edible part.

All the methods applied to the samples are under accreditation by the Spanish Accreditation Body (ENAC). Reference to accreditation and methods can be consulted at: <https://www.enac.es/documents/7020/4bc4df18-01c9-45b2-a21e-b858b0f25b78>

### **Desalting trials.**

The 40 mm sections were weighed in 14 L plastic boxes and tap water was added to the container in a fish: water ratio of 1:5. The boxes were stored in the cool chamber at 2-3°C and water was renewed at predefined intervals:

#### Pacific Cod: (Day 1 & 2 batches: 16 samples)

- Total desalting time: 54 h.
- 4 water changes after 6 h, 21h, 30 h, 45 h.

The desalting conditions applied to haddock were different to pacific cod due to reduced piece width.

#### Haddock (Day 1 batch: 8 samples)

- Total desalting time: 33 h.
- 3 water changes after 4 h, 9h, 24 h.

Haddock (Day 2 batch: 8 samples)

- Total desalting time: 48 h.
- 4 water changes after 4 h, 9h, 24 h, 32 h.



Figure 3: Desalting trials. Boxes stored in the cool chamber.

At the end of the desalting trials pieces were mesh strained for 2 min., packed in sealed plastic bags with identification codes and transferred to laboratories for analysis.

## 4. Results and discussion

In addition to the individual analytical results presented in an annex file (.xlsx) the desalting yields were calculated, obtaining a 16% and 20% weight increase for haddock and pacific cod respectively, and a final moisture content of 76.5% and 77.9%. The more water present leads to reduced protein content with 19.1% for pacific cod and 20.9% for haddock. Both species are one of the best examples of lean fish since the presence of fat is scarce. The same occurs to carbohydrates and sugars which remain hardly detectable in desalted samples. Desalting has been effective and the final salt content was around 2g/100g for both samples. It should be noted however that, even though the conditions were the same there has been an important variation in salt content between samples, especially for haddock, that might be probably associated to the different fish size.

The labels were made up based in an in-depth reading to Brazilian regulation and checking the labelling Q&A repository at the Brazilian DIPOA website. The mean results of the analysis of dried salted fish and desalted fish were used to fill the tables according to the requirements. Certain criteria were also discussed via e-mail with companies and Brazilian consultancy agencies. Moreover, it has been also discussed the need of the inclusion of the suggestions of use of the food materials regarding desalting. Agreed industry recommendations for desalting clipfish were defined, translated to Portuguese language and included in the label. Finally, the factsheets including the reference labels were approved and made public to be used by the industry.

## **5. Main findings. Value for the industry.**

The valuable results obtained in this study were:

- Agreed criteria for desalting among companies.
- Updated nutritional database for dried salted and desalted pacific cod and haddock.
- Reference labels complying to Brazilian regulation ready to be included in the carton boxes.

## **6. Deliverables.**

- Final reporting
- Factsheet including labels for the Brazilian market.

## Annex I: Nutritional labels for the Brazilian market for dried salted Pacific cod & Haddock.

### Bacalhau-do-Pacífico salgado

<b>INFORMAÇÃO NUTRICIONAL</b>			
Porções por embalagem: Cerca de 417 porções			
Porção: 60 g ( 3 colheres de sopa)			
	<b>100 g**</b>	<b>60 g</b>	<b>%VD*</b>
Valor energético (kcal)	78	62	3
Carboidratos totais (g)	0	0	0
Açúcares totais (g)	0	0	0
Açúcares adicionados (g)	0	0	0
Proteínas (g)	19	15	30
Gorduras totais (g)	0	0	0
Gorduras saturadas (g)	0	0	0
Gorduras trans (g)	0	0	0
Fibra alimentar (g)	0	0	0
Sódio (mg)	878	4388	219
* Percentual de valores diários fornecidos pela porção			
** No alimento pronto para o consumo			

### Haddock salgado seco

<b>INFORMAÇÃO NUTRICIONAL</b>			
Porções por embalagem: Cerca de 417 porções			
Porção: 60 g ( 3 colheres de sopa)			
	<b>100 g**</b>	<b>60 g</b>	<b>%VD*</b>
Valor energético (kcal)	86	67	3
Carboidratos totais (g)	0	0	0
Açúcares totais (g)	0	0	0
Açúcares adicionados (g)	0	0	0
Proteínas (g)	21	16	32
Gorduras totais (g)	0	0	0
Gorduras saturadas (g)	0	0	0
Gorduras trans (g)	0	0	0
Fibra alimentar (g)	0	0	0
Sódio (mg)	833	4530	227
* Percentual de valores diários fornecidos pela porção			
** No alimento pronto para o consumo			