



Does information affect consumer liking of farmed and wild fish?



Anna Claret ^a, Luis Guerrero ^{a,*}, Irene Gartzia ^b, Maruxa Garcia-Quiroga ^b, Rafael Ginés ^c

^a IRTA-Food Technology, XaRTA, Finca Camps i Armet s/n, E-17121 Monells, Girona, Spain

^b AZTI-Tecnalia, Astondo Bidea, Edificio 609, Parque Tecnológico de Bizkaia, E-48160 Derio, Bizkaia, Spain

^c ULPGC-Instituto Universitario de Sanidad Animal y Seguridad Alimentaria, Dept. Acuicultura y Genética Marina, Trasmontaña s/n, E-35413 Arucas, Las Palmas, Spain

ARTICLE INFO

Article history:

Received 1 July 2014

Received in revised form 19 November 2015

Accepted 18 December 2015

Available online 21 December 2015

Keywords:

Consumer
Overall liking
Farmed fish
Wild fish
Information

ABSTRACT

Sensory characteristics have been proven to be the strongest driver of fish consumption in general, as well as one of the main barriers for the complete acceptance of fish from aquaculture. The main goal of the present study was to determine consumers' liking for both farmed and wild fish and to evaluate the effect of information regarding the species and the method of production (wild capture/aquaculture) on it.

Two groups of approximately 300 participants each consuming fish at least twice a week with similar socio-demographic distributions were recruited in three Spanish regions. Four different species (black spot sea bream, gilthead sea bream, sea bass and turbot), each of them from both wild capture fisheries and aquaculture, were evaluated by the two groups of participants. Within each species samples were obtained simultaneously and were frozen until their evaluation for a maximum of 1 month. One group of individuals evaluated the fish samples in a blind condition and the other in an informed condition.

A significant effect of species was detected in both cases, although similar liking profiles were observed in the informed and blind conditions. The mean liking scores of sea bass, turbot and gilthead sea bream did not differ, and these species were significantly more appreciated than black spot sea bream. Information provided to consumers had a significant effect on hedonic evaluation of the fish samples. Therefore, in the informed condition, participants preferred wild fish but, interestingly, when information was not provided to them, the scenario was the opposite. It is worth mentioning that farmed fish was similarly evaluated in both the informed and blind conditions, whereas the liking of wild fish significantly increased when information was provided to consumers. These results seem to indicate that farmed fish per se does not have a negative image among consumers but also indicate the existence of a generalised positive attitude towards wild fish. A significant influence of consumer beliefs about farmed versus wild fish was observed in the informed condition.

These findings constitute a valuable insight and provide an optimistic scenario for the aquaculture sector given that the improvement of the sensory characteristics of farmed fish does not seem to be necessary. However, providing consumers with reliable information that helps them to value the two types of fish based on scientific evidences would be needed.

Statement of relevance

The farmed fish sensory quality does not need to be improved.

© 2015 Published by Elsevier B.V.

1. Introduction

Global fish consumption has greatly increased in recent decades and is expected to increase substantially in the future (Cahu et al., 2004; FAO, 2012). The wild capture fisheries have been supplying high-quality fish and seafood to the market for a long time. However, unsustainable fishing practises and other factors such as habitat destruction, pollution, climate change or invasive species have led to fish stock depletion and collapse. Given these circumstances, aquaculture seems

to be the most suitable alternative complementary to traditional fishing to gradually satisfy global consumer demand (FAO, 2012).

Previous studies indicate that the consumer image of farmed fish differed significantly from that of wild fish (Ernst and Young, 2008; Kole, 2003; Verbeke and Brunso, 2005; Verbeke et al., 2005; Verbeke et al., 2007). Aquaculture is acknowledged as an ancestral practise (Rabanal, 1988); however, in Mediterranean countries, wild capture fishing is a deeply rooted tradition, with fresh fish being supplied almost daily to fish retail shops all over the country. This is probably the reason why wild-caught fish are the base reference for most consumers. Claret et al. (2014) conducted an extensive study about consumer beliefs in Spain comparing wild and farmed fish and concluded that the

* Corresponding author.

E-mail address: lluig.guerrero@irta.es (L. Guerrero).

differences between them were mainly related to aspects associated to safety (marine pollution, heavy metals, antibiotics, parasites, healthy animal feeding and healthiness), quality (overall quality, freshness, nutritional value, fat, flavour and firmness), control (control in general, handling, artificial character and guarantees) and aspects related to the moment of buying (ease of finding the product in the market and price). They concluded that wild fish was perceived by consumers as having higher overall quality, thus making the sensory characteristics of farmed fish, particularly taste, one of the main barriers for the complete acceptance of fish from aquaculture.

Sensory characteristics are important determinants of food liking and choice (Amerine et al., 1965; Clarke, 1998; Siret and Issanchou, 2000). In the case of fish, taste has proven to be the strongest driver of intent to consume it (Verbeke and Vackier, 2005). However, according to Lyman (1989), liking is not only a function of the pleasantness or unpleasantness of the sensory characteristics but is also influenced by consumer attitudes towards the product that are determined by cognitive and emotional factors. Therefore, when consumers buy and eat a certain food product, the available information can have a relevant effect on their liking and behaviour (Siret and Issanchou, 2000). Information influences the expectation formation process (Deliza et al., 2000) that in turn can modulate sensory perception (Carrillo et al., 2012; Deliza et al., 1996; Siegrist and Cousin, 2009; Varela et al., 2010). Indeed, it is well known that consumers' sensory evaluation of a food product as well as food choice can be influenced by information about raw material, production system, animal welfare, origin, health claims, nutritional properties, brand quality certification as well as price, among other factors (Carlucci et al., 2009; Cerjak et al., 2011; Claret et al., 2012; Kihlberg et al., 2005; Poelman et al., 2008; Resano et al., 2007; Siret and Issanchou, 2000). This is especially evident in fresh products for which little information is normally provided and for which consumers tend to have substantial difficulties in forming quality expectations (Font i Furnols and Guerrero, 2014). In this sense, the method of production (wild or farmed) could be used to determine fish quality expectations.

Several studies have been published evidencing objective significant sensory differences (trained assessors) between wild and farmed fish in terms of appearance, aroma, flavour and/or texture (Farmer et al., 2000; Gartzia et al., 2012; Grigorakis, 2007; JACUMAR, 2012; Olsson et al., 2003). However, little is known about consumer's perception of the sensory characteristics of both types of fish (Farmer et al., 2000; Luten et al., 2002) and even less about whether information provided to consumers might affect their liking of the fish.

It is also important to bear in mind that factors such as availability, presentation, convenience, price and also quality, safety and hygiene, and nutritional value linked to the different species that can be found in the market may also influence consumer preferences and evaluation of fish. Therefore, the main goal of the present study was to determine consumers' liking for both farmed and wild fish in blind condition versus informed condition in order to evaluate the effect of the information provided regarding the species and the method of production.

2. Methodology

2.1. Participants

Two groups of approximately 300 participants each with similar socio-demographic distributions (Table 1) were selected by phone in 3 Spanish regions (Catalonia, Madrid, and Basque Country) by means of probabilistic sampling per quotas including age (20–70 years old) and gender (minimum 40% men) as the selection criteria. In addition, education level was also registered. The recruited consumers had to consume fish at least twice a week and to be involved in food purchases and preparation in their household. Gender distribution showed a slight bias when compared with the Spanish population (50.3% men and 49.7% women) (INE, 2011). This bias may be explained by the recruitment criterion because women are still primarily responsible for food

Table 1

Socio-demographic description of the participants of the study ($N_{\text{Informed condition}} = 297$; $N_{\text{Blind condition}} = 300$).

Socio-demographic characteristic		Informed condition (%)	Blind condition (%)	Total (%)	Significance*
Region	Catalonia	33.3	33.3	33.3	NS
	Madrid	32.7	33.3	33.0	NS
	Basque Country	34.0	33.3	33.7	NS
Gender	Men	45.6	42.7	44.1	NS
	Women	54.4	57.3	55.9	NS
Age	≤35 years	38.6	41.5	40.1	NS
	36–55 years	41.7	41.5	42.4	NS
	>55 years	19.7	15.4	17.5	NS
Education	Elementary	13.8	10.0	11.9	NS
	Medium	54.5	49.7	52.1	NS
	Higher	31.6	40.3	36.0	NS

* : Comparison between informed and blind conditions by means of a chi-square test. NS: not significant ($p > 0.05$).

purchasing and preparation within the household in Spain (Guàrdia et al., 2006). The age distribution approximately fit the Spanish population (20–35 years old: 33.3%; 36–55 years old: 44.6%; 50–70 years old: 22.1%) (INE, 2011). The percentage of consumers with elementary and medium levels of education showed a bias in comparison with the national average (46% and 22%, respectively) (Ministerio de Educación, Cultura y Deporte, 2013). This bias was probably due to the higher predisposition for participation that people with a medium to high level of education tend to have (Claret et al., 2012).

2.2. Fish samples

The following four different species, each from both wild capture fisheries and aquaculture, were evaluated: black spot sea bream (*Pagellus bogaraveo*), gilthead sea bream (*Sparus aurata*), sea bass (*Dicentrarchus labrax*) and turbot (*Scophthalmus maximus*). These species were selected based on their production and consumption, price differences and availability as both wild and farmed fish (APROMAR, 2013). One hundred ten animals of each species and method of production with similar weight (approx. 500 g for black spot sea bream, gilthead sea bream, sea bass and 1.5–2 Kg for turbot) were selected from the main Spanish areas of production and catching of these species (black spot sea bream from Galicia, gilthead sea bream from Murcia, sea bass from Andalusia and turbot from Cantabria). The fish were flaked (excepting turbot), and the two dorsal fillets of each animal were taken, avoiding the red muscle. Next, fillets were wrapped in pairs using transparent food-grade PVC film (oxygen permeability: 20,000 $\text{cm}^3/\text{m}^2/24 \text{ h}$; water-vapour transmission rate 2000 $\text{g}/\text{m}^2/24 \text{ h}$; Macopal, S.L., Lliçà de Vall, Spain) and kept in 165 × 240 mm^2 sealed bags (12 μm metallic polyester/110 μm polyethylene multilayer; oxygen permeability: <1.5 $\text{cm}^3/\text{m}^2/24 \text{ h}$; water-vapour permeability: <1 $\text{g}/\text{m}^2/24 \text{ h}$; Sacoliva, S.L., Castellar del Vallès, Spain) at $-20 \pm 2 \text{ }^\circ\text{C}$ for a maximum of 1 month.

2.3. Procedure

Twenty-four hours before sensory evaluation, fish samples were thawed at $4 \pm 2 \text{ }^\circ\text{C}$ and unwrapped. Three 2 × 3 cm^2 pieces were obtained from every fillet (each identified by the cutting order from the cranial to the caudal zone). Pieces of fish were individually placed in covered aluminium E-150 containers (Fedinsa, Logroño, Spain) and cooked in a preheated convection HBA 74 A 250E oven (Bosch, Barcelona, Spain) at $110 \pm 2 \text{ }^\circ\text{C}$ for 15 min.

In the same session, participants evaluated the 8 fish samples (4 species × 2 methods of production) in a sensory testing room with ten individual booths at $20 \pm 2 \text{ }^\circ\text{C}$ under F8W/D daylight conditions (Sylvania, United Kingdom). They were assisted by two researchers who provided instructions for the procedure to taste the fish samples.

Download English Version:

<https://daneshyari.com/en/article/2421514>

Download Persian Version:

<https://daneshyari.com/article/2421514>

[Daneshyari.com](https://daneshyari.com)