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Aquaculture Europe 2015
Rotterdam, Netherlands

SENSORY PROFILE OF STURGEON (ACIPENSER BAERI) MEAT

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Introduction

The companies that produce sturgeon to market caviar as their main product, obtain sturgeon meat as a by-product. Nevertheless, the meat of sturgeon females from whom caviar has been extracted, can be a good product by itself. To target this meat market, there is a need to know and to standardize the sensorial and nutritional profiles of this specific meat in order to increase their value and therefore their demand by consumers. The aim of this paper is to describe the sensorial profile of mature female sturgeon meat.

Material and methods

The study was performed on frozen sturgeon fillets of females, provided by Caviar Nacarii SLU, after extracting the caviar, and after 24 hours of meat maturation at 4°C. To perform the sensorial analysis the dark muscle of the fillet was carved out and discarded in order to use samples containing only white flesh in the panel tests. The methodology used in the sensory analysis was the sensory profile. (Carbonell et al, 2002). The human capacity to detect differences is high, but it is difficult for humans to evaluate the absolute attributes. So, a comparison of the sturgeon meat with two other fish species was performed. The different steps of the used methodology were the following: (1) Initial selection of sensorial relevant attributes, (2) Selection of a group of 10 assessors without a previous experience, and their training for these relevant attributes, (3) Final selection of the specific attributes to be used in the analysis profile, (4) Validation of the panel (introducing some species different from the ones used to train the panel) and (5) Evaluation of three different fish species including the sturgeon, in different sessions. All sensorial sessions were performed in panel booths following ISO 8589 (2007), where colour is masked to avoid colour influence on taster decisions. So colour was not used in the sensory profile. All sessions were performed during the morning between (11-12 am). All samples were presented hot in aluminium paper, and coded with three random digits to avoid an *a priori* ranking between samples. All samples, except sturgeon, were obtained from frozen specialized shops. After defrosting, samples were cooked in an oven until the optimal point of cooking for each species. Species used were for training: *Xiphias gladius* (swordfish), *Salmo salar* (salmon) and *Hipoglossus*

hipoglossus (halibut), for panel validation: *Prionace glauca* (blue shark), *Merluccius pollactius* (hake) and *Pollachius pollachius* (pollack), and for establishing the sensorial profile of sturgeon meat *Acipenser baeri* (sturgeon), *Salmo salar* (salmon) and *Xiphias gladius* (swordfish). Results were analysed through a three-way anova taking into account product, assessor and session.

Results

Attributes selected after training were: Odour intensity, Off-odours, flavour intensity, Off-flavours, laminar structure, firmness, chewiness, and juiciness. Validation results showed that assessors could differentiate the three species using these attributes. Results for the analysis profile of sturgeon, using a three-way ANOVA showed that sessions did not significantly influence, but there was an interaction between fish and assessor, for attributes (off-odours, off-flavours, laminar structure and juiciness) what could be explained because some assessor did not rank samples in the same way for these attributes in some session.

The spider diagram showed that sturgeon is more similar to salmon than to swordfish, even if there are some significant differences, being values (range 0 to 10) very similar as it is shown in the table. Odour and flavour intensity of salmon and sturgeon, even if similar, are significantly milder for sturgeon, and there is a lack of off odours and off flavours in both species, The attributes firmness, chewiness and juiciness do not show differences between sturgeon and salmon, but both species are significantly different from swordfish. The main attribute that differentiated these species was the laminar structure that was clearly stronger in salmon, intermediate in sturgeon and low in swordfish.

Discussion and conclusions

Even if there are some differences between salmon and sturgeon, sturgeon meat could be considered in the range of salmon comparing with other species, taking into account that colour could not be perceived by the assessors. So the target for the marketing of sturgeon meat could be the salmon consumer, what means a broad market if the fillets are well presented. In some instances a presence of off-flavours and off- odours in sturgeon have been reported, the lack of these in this project can be related with the culture facilities of these sturgeons being of clean concrete tanks. In this project only mature female sturgeon meat has been evaluated, and from this preliminary study, we can conclude that sturgeon meat can be a high quality product by itself. Nevertheless it will be important to perform similar studies in other ages and sexes in order to determine if a unique product can be obtained (mature females where caviar has been extracted, young males once the sex is known, that will be used only as meat) or if both products will have to be marketed under specific commercial profiles.

References

Carbonell, I, Izquierdo, L and E. Costell. 2002. Sensory Profiling of Cooked Gilthead Sea Bream (*Sparus aurata*): Sensory Evaluation Procedures and Panel Training. Food Sci. Tech. Int. 8(3):169-177.

ISO 8589. 2007. Sensory Analysis-General Guidance for the Design of Test Rooms. International Organisation for Standardization (Génève, Switzerland).

	Odour intensity	Off-odours	Laminar structure	Flavour intensity	Off-flavours	Firm ness	Chewi ness	Juici ness
Swordfish	4.6 a	2.7 a	3.2 c	4.8 ab	3.1 a	6.6 a	6.8 a	2.7 b
Salmon	4.5 a	1.3 b	7.4 a	5.8 a	1.7 b	4.2 b	4.6 b	4.4 a
Sturgeon	4.0 b	1.1 b	4.4 b	4.2 b	1.8 b	4.7 b	4.8 b	5.1 a

Table. Comparison of sensory profile values for three products in the range from 0 to 10, for specific attributes different letters mean significant differences (with a p ≤0,05)
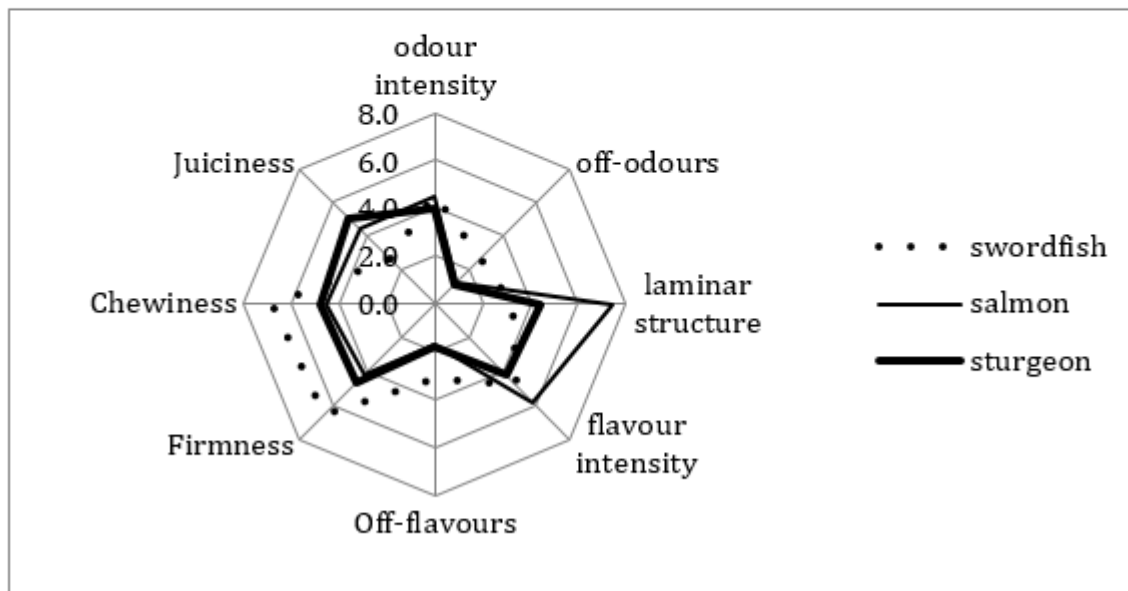

Figure. Spider diagram for sturgeon, swordfish and salmon sensory profile

<< Abstract Session
(SessionAbstracts.aspx?
Session=16)

<< All Sessions
(Sessions.aspx)