

Impact of presentation on liking, acceptance and sensory profiling of sea urchin gonads from the North Atlantic coast of Portugal

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Introduction

The edible parts of the sea urchin (*Paracentrotus lividus*) are the gonads, being one of the world's most expensive seafood products (Baião et al., 2019). However, the sensory profile of this highly demanded gourmet product is not well described yet and may help enhancing gonads marketability and acceptability. The main goal of this study was to build a sensory profile of sea urchin gonads, to evaluate differences between sex and harvest location, as well as the impact of presentation on consumers acceptance, using fast profiling techniques, such as Check-All-That-Apply (CATA) (Meyners et al., 2013).

Material and Methods

Sixty untrained panellists (regular consumers of seafood) were asked to evaluate eight samples of raw sea urchin gonads, divided by sex, harvest location and presentation (over white plate or in shell). The panellists evaluated overall liking and acceptance (Food Action Scale), followed by a CATA ballot with a list of 38 sensory attributes divided into four dimensions (Table 1). A correspondence analysis (CA) was applied to obtain a two-dimensional representation of the sample's terms (Figure 2). Multidimensional alignment (MDA) was also performed to determine the correlation between the attributes and the samples vectors (Adams et al., 2007) (Figure 3).

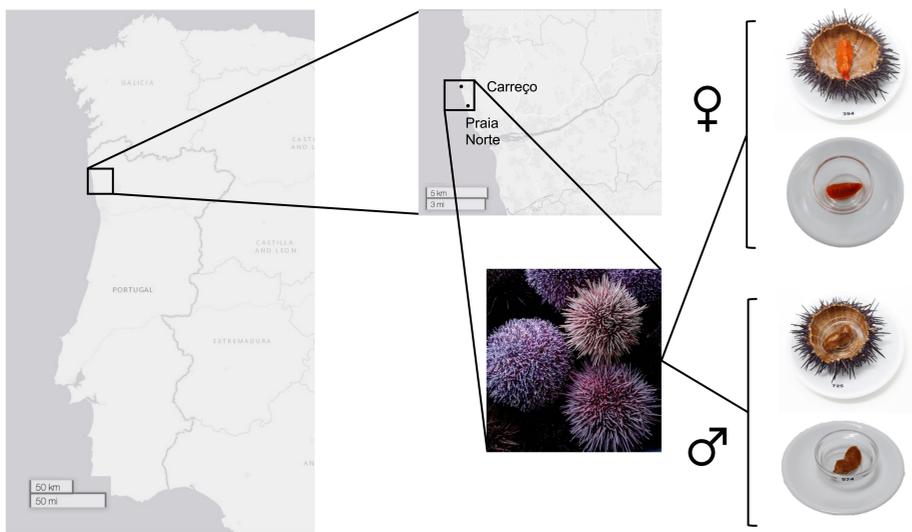


Figure 1 - Map of the study area showing the localization of the sampled shores, Carreço and Praia Norte and scheme of the division by sex and presentation mode (in shell – gourmet like and on plate dish).

Table 1 - List of 38 sensory attributes divided into four dimensions

Sensory dimension	Descriptor
Appearance	Firm; milky white fluid; grainy; appealing; not appealing; soft/slimy; yellow; orange; brownish.
Odour	Sea smell; sweet; fresh; tropical; pleasant; unpleasant; earthy; sulfuric.
Texture/Mouth-feel	Soft; creamy; firm; juicy; grainy; dry; astringent.
Taste	Salty; tropical; sweet; sea taste; intense; soft; pleasant; cloying; unpleasant; earthy; sour; bitter; metallic; prolonged aftertaste.

Results

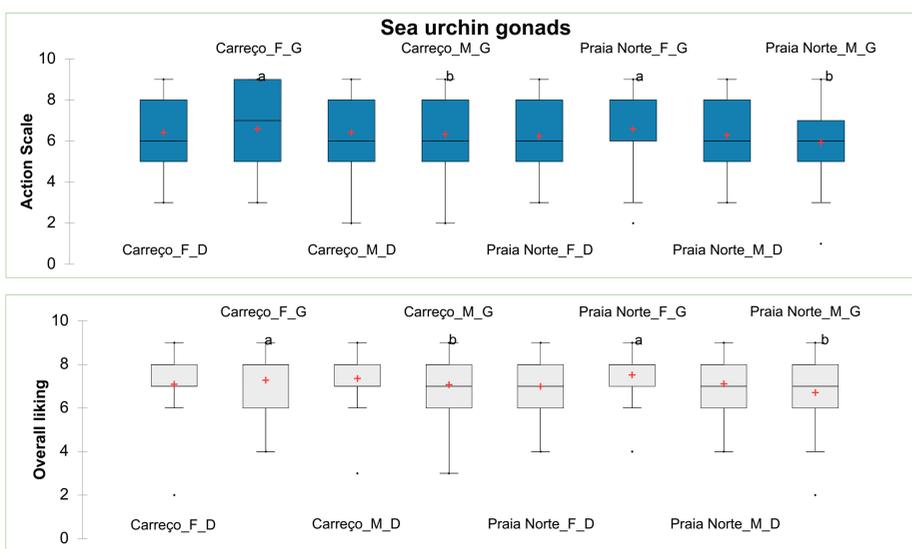


Figure 2 – Boxplots of action scale and overall liking. abc indicate significant differences between source X sex X presentation. Abbreviations are M = Male, F = Female, D = Dish, G = Gourmet.

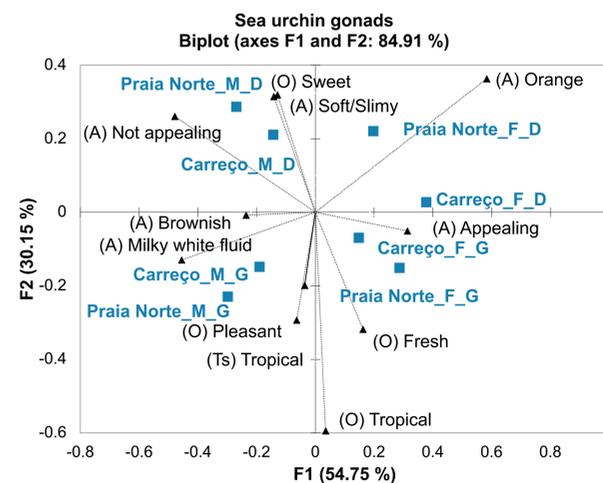


Figure 2 – Dimensions 1 and 2 of correspondence analysis of CATA (Check-All-That-Apply) questionnaire applied to sea urchin gonads samples. Abbreviations are M = Male, F = Female, D = Dish, G = Gourmet, O = Odour, Ts = Taste and A = Appearance.

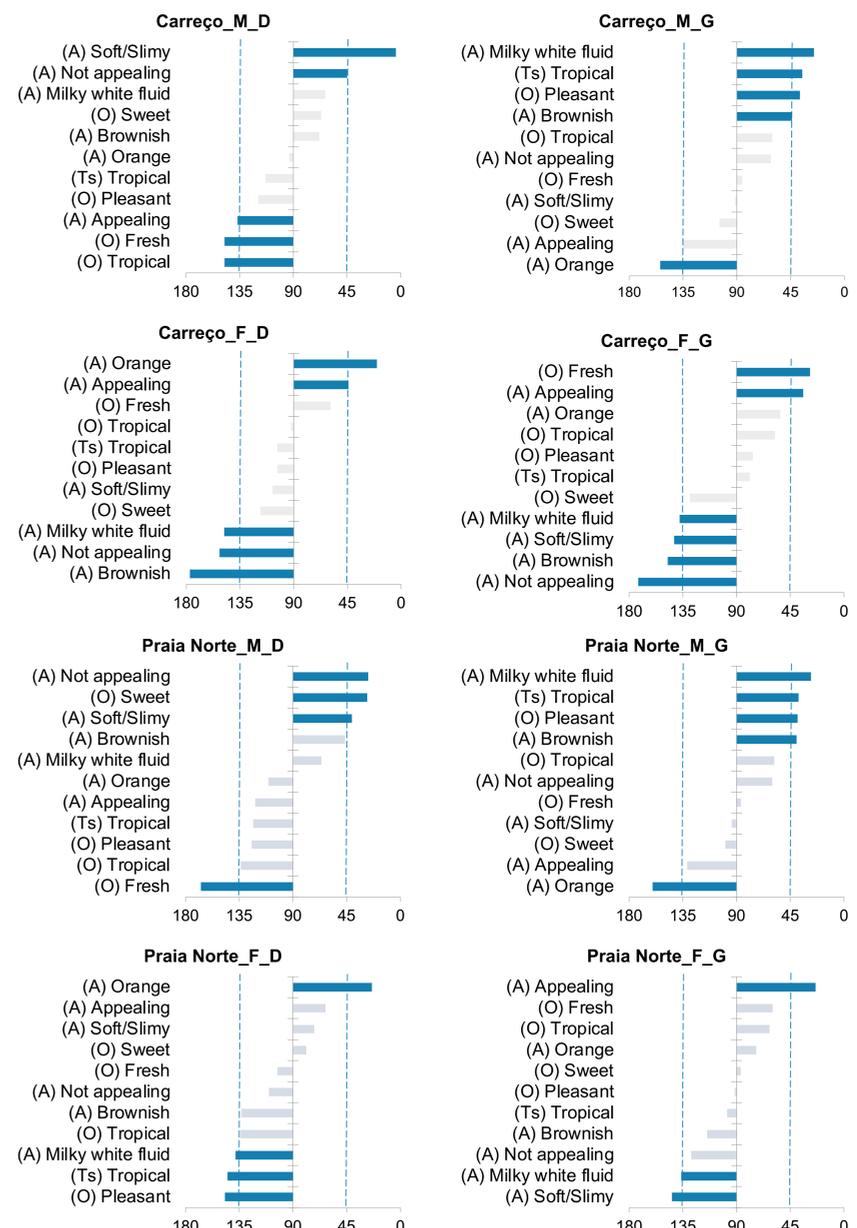


Figure 3 - Associations between attributes and products based on MDA. Abbreviations are M = Male, F = Female, D = Dish, G = Gourmet, O = Odour, Ts = Taste and A = Appearance.

Conclusions

Sensory profiling clearly separates gonads according to sex, with females being more “appealing” than males that presented a “milky white fluid”; Gonads were also separated according to the presentation method: gonads on a plate were perceived as sweet and gourmet being more associated with a tropical odour and taste. This study concluded that sea urchin with an orange gonad and a sweet, fresh and tropical flavour is preferable, which will allow future nutritional research efforts to be focused in the enhancement of these gonad attributes set.

Acknowledgements / Notes

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