



Physicochemical and microbiological changes in dried small-spotted catshark (*Scyliorhynchus canicula*): developing an alternative shark-based salted-dried seafood product

Eduardo Esteves^{1, 2*}, Hugo Lourenço¹, Igor Rosa¹ and Jaime Aníbal^{1, 3}

¹ Universidade do Algarve, Departamento de Engenharia Alimentar, Instituto Superior de Engenharia, Portugal

² CCMAR Centro de Ciências do Mar, Portugal

³ CIMA Centro de Investigação Marinha e Ambiental, Portugal

A relatively high proportion of harvested seafood is still wasted due to spoilage, particularly in developing countries, or because they are by-catches or have little economic value, seemingly related to inherent problems linked to unattractive color, flavor, texture, small size, and high-fat content. Thus, many fish and seafood species are still underutilized.

Dried blackmouth catshark (*Galeus melastomus*), named "litão seco", is a high-priced, traditional seafood product that is consumed in some localities in the Algarve (South of Portugal). Other species of small-sized sharks, such as the small-spotted catshark (*Scyliorhynchus canicula*), are also widely caught in the region and could be valorized using similar processing techniques.

Ultimately, our aim is to contribute to the optimization of a salted-dried seafood product prepared from small-spotted catshark akin to traditional dried blackmouth catshark.

This work focused on studying the changes in physicochemical (pH, water content and activity (aW), chlorides content, rehydration ratio and CIE L*a*b* color) and microbiological (total viable counts (TVC), yeasts and molds, and abundance of *Staphylococcus aureus*) parameters of small-spotted catshark salted (for 3h and 24h) and dried (convection oven for 24h and tray drier for 3h). Expectedly, salting and drying reduced the water content and aW significantly (ANOVA, $p < 0.001$) from about 80% and 0.984 for fresh fish to 41.9–52.7% and ca. 0.75 in transformed fish, respectively. In contrast, chloride content in shark fillets increased significantly ($p < 0.001$) from 0.5 g/100 g to 20–24.4 g/100 g. Also, significant but distinct changes in color, namely L* and b*, were observed for the different combinations of time and drying method. TVC were significantly ($p < 0.001$) reduced from >6 log CFU/g in fresh fish to 2–4 log CFU/g in the salted-dried shark. The abundance of yeasts was reduced in samples oven-dried for 24h, from 3.6 log CFU/g to 0.6 log CFU/g, but not so much after 3h in the tray-drier (to 2.7–3.5 log CFU/g). Salted-dried samples still presented *S. aureus* (1.1–2.4 log CFU/g) compared to fresh specimens (2.7 log CFU/g) ($p = 0.546$).

The relationships between parameters and their implications regarding final product's quality and safety are discussed. From our results, salted-dried *S. canicula* is a suitable candidate for becoming a traditional seafood product comparable to "litão seco".

Keywords: Catshark, Salted-Dried, Traditional product, Physicochemical analyses, Microbiological parameters, quality and safety

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* **Correspondence:** Prof. Eduardo Esteves, Universidade do Algarve, Departamento de Engenharia Alimentar, Instituto Superior de Engenharia, Faro, 8005-139 Faro, Portugal, eesteves@ualg.pt

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