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Supercritical Carbon Dioxide Extraction of Volatile Compounds from *Cancer Pagurus* Processing Byproducts

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Cancer pagurus, commonly known as brown crab, is a species of crab mainly found in the North Sea and the North Atlantic Ocean. It is available throughout the year and is heavily exploited commercially. Its global catch has increased steadily along the years rising to 60,000 t in 2007 (FAOSTAT). *Cancer pagurus* by-products may be as much as 70% of total crab weight, and only a small amount of these by-products is processed into value-added products.

Flavor is considered a high value product and good quality shellfish flavors are in high demand for being used in sauces, soups, instant noodles, snacks, etc. Methods such as simultaneous distillation-extraction or enzymatic hydrolysis have been commonly used for isolating crab flavour from processing by-products. In this work supercritical fluid extraction (SFE) has been proposed as an alternative technique to obtain high quality crab flavors. The identification of the volatile components was performed by using a HS-SPDE-GC-MS equipment, that is Headspace - Solid Phase Dynamic Extraction - Gas Chromatography - Mass Spectrometry.

Supercritical (SC) carbon dioxide extractions have been performed in a plant equipped with a two liter extractor. Different extraction experiments were performed to study the influence of extraction pressure and temperature and separator pressure on the volatile composition of the extract. Extraction pressure ranged from 100 to 500 bar and temperature from 40 to 80°C. The pressure in the separator was varied from 38 to 42 bar.

From the volatile profile of the SC-extracts it could be observed that the number of aldehydes and ketones tends to increase with extraction temperature, while in the case of alcohols this effect seems to be the opposite. At extraction pressures above 180 bar the co-extraction of some fatty acids was observed leading to an organic phase in the extracts. The high content of unsaturated fatty acids (70%) made this organic phase prone to lipid oxidation. It was also observed that the amount of total volatile components recovered in the extract increased when decreasing the separator pressure in the range studied in this work.