

## Characteristics and Quality of Chilean Abalone Undergoing Different Drying Emerging Technologies

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**Abstract :** The Chilean abalone (*Concholepas Concholepas*) is a gastropod mollusk; it has a high commercial value due to the qualities of its meat, especially hardness, as a critical acceptance parameter. However, its main problem is its short shelf-life which is usually extended using traditional technologies with high energy consumption. Therefore, applying different technologies for the pre-treatment and drying process is necessary. In this research, pulsed electric field (PEF) was used as a pre-treatment for vacuum microwave drying (VMD), freeze-drying (FD), and hot-air drying (HAD). Drying conditions and characteristics were set according to previous experiments. The Drying samples were analyzed in terms of physical quality (color, texture, microstructure, and rehydration capacity), protein quality (degree of hydrolysis and computer protein efficiency ratio), and energy parameters. Regarding quality, the treatment that obtained lower hardness was PEF+FD ( $195 \text{ N} \pm 10$ ), the lowest change of color was for treatment PEF+VMD ( $\Delta E: 17 \pm 1.5$ ), and the best rehydration capacity was for treatment PEF+VMD (1.2 h for equilibrium). For protein quality, the highest Computer-Protein Efficiency Ratio was the sample 2.0 kV/cm of PEF (index of  $4.18 \pm 0.26$  at the end of the digestion). Moreover, about energetic consumption, results show that VMD decreases the drying process by 97% whether PEF was used or not. Consequently, it is possible to conclude that using PEF as a pre-treatment for VMD and FD treatments has advantages that must be used following the consumer's needs or preferences.

**Keywords :** chilean abalone, freeze-drying, proteins, pulsed electric fields

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