

Drying of by-products from agricultural production and agri-food industry

Waste2Value

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This work aimed to evaluate the use of dehydration by indirect solar drying, as a conservation technique, to enable the sustainable use of by-products.



AVATAR Dryer



Spinach in the dryer

Description

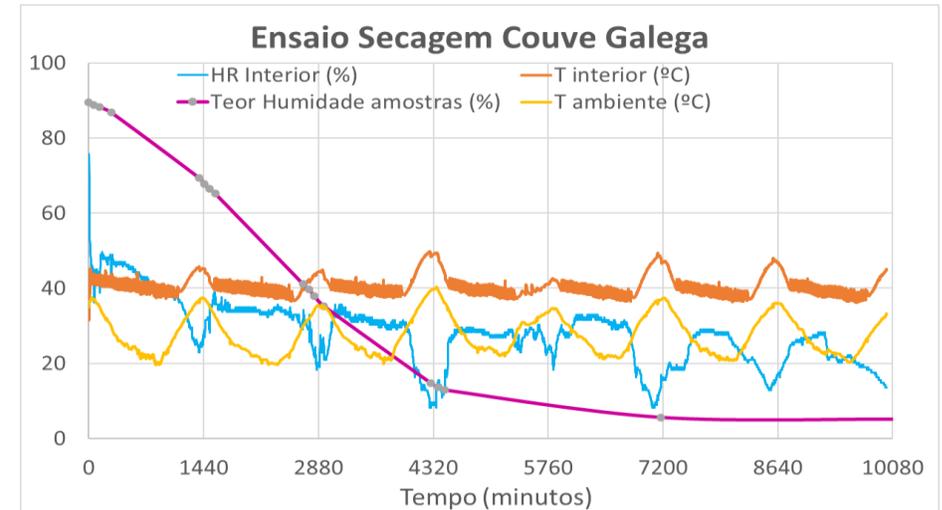
The species studied were selected with partner companies and supplied by them: spinach, lettuce, kale, onion skin, thyme, anise and apple pomace.

The initial moisture contents of each species were determined.

In a climatic chamber, drying curves were obtained and the influence of temperature and relative humidity of the drying air on the final composition of the product was evaluated.

Field tests were carried out with two types of solar dryers to validate their effectiveness, optimize the operating parameters and assess the energy cost of the process. The dryers were equipped with an electrical auxiliary air heating system.

All samples of by-products tested were subjected to chemical characterization analysis before and after drying.



Results

Noted the importance of drying temperature in the time to complete the process and in the equilibrium moisture content;

Temperature has a negative influence on the nutritional content, namely in terms of protein, antioxidant activity and sugars;

The use of auxiliary electric heating is recommended to compensate for the absence of sun and thus prevent product deterioration;

Solar energy contributed to the sustainability of the process, reducing the need for electrical energy by 35%.

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