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INTRADFOOD 2005

25-28 OCTOBER 2005 • VALENCIA • SPAIN

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[P4.34]

Improvements on the traditional method used to produce dried pears in Portugal

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In Portugal dried pears are produced from pears of the variety identified as *S. Bartolomeu* by a traditional open-air solar drying process, that includes the following steps: 1 – skin removing; 2 – a first drying stage in which the pears are exposed to the sun for 5 to 8 days; 3 – a barrelling process in which the pears are covered and left at shadow to increase elasticity; 4 – a pressing operation where the pears change their characteristics from round shape to a flattened one; 5 – a second drying stage, also at the sun, but for only 2 to 3 more days.

Although it is a much appreciated food product its production is very small due to the complexity and slowness of the processing method, to the intensive handwork and space requirements and to the shortcomings associated to the natural open-air sun drying. In fact, this process greatly depends on atmospheric conditions, with the variations in temperature influencing quite significantly the drying rates and the rain or night moist delaying or stopping the process, or even rotten the fruits. Moreover, the process is not very hygienic, and during the drying the pears are exposed to dust and can be attacked by ants, rats, bacteria and fungi, and therefore reliable quality standards are difficult to meet.
It is important to adapt the traditional drying process, making it a profitable and competitive production method, offering the consumer products of unquestionable quality. To achieve these goals a solar stove was used for the drying, and 4 varieties of pears were tested in order to find alternatives to the traditional variety.

The pears of the varieties *Amêndoa*, *Amorim*, *Carapinheira Branca* and *S. Bartolomeu* (this one is the traditional) were peeled and dried in a solar stove, following the steps of the traditional method, and their water content was evaluated throughout the drying process. The temperature and relative humidity inside the stove were measured hourly. The nutritional value of the pears was evaluated before and after drying for the 4 varieties, as well as their microbial charge.

It was possible to conclude from the present work that the use of the solar stove allowed the obtaining of conditions very favourable to drying, with periods of very high temperatures and very low relative humidities, and also enabling to proceed with drying even when the outside conditions would not allow it. It was also concluded that the four varieties have a very similar kinetic behaviour and that the use of the stove did not influence the nutritional value of the pears.

Keywords: pear drying, solar drying, solar stove, nutritional value