Apricot processing suitability linked to its macronutrient composition: a part of DeshyFruit project
Barbara Gouble, Patrice Reling, Adrien Servent, Pierre Brat, Véronique Vidal, Sandrine Laurent, Jean-Marc Audergon

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Apricot processing suitability linked to its macronutrient composition: a part of DeshyFruit project

Barbara G O U B L E 1 - Patrice REL I N G 1
Adrien SERV E N T 2, 3 - Pierre BR A T 2, 3
Véronique VID A L 1, 4 - Sandrine LAU R E N T 1, 4
Jean-Marc AUD ER G O N 5

INRAE, Avignon Université, UMR SQPOV, F-84914 Avignon, France
CIRAD, UMR QualiSud, F-34398 Montpellier, France
QuaIusit, Univ. Montpellier, CIRAD, Montpellier SupAgro, Avignon Univ., Univ. La Réunion
Avignon Université, UMR QualiSud, F-84911 Avignon, France
INRAE, GAFL, F-84413 Montpellier Cedex, France
*barbara.gouble@inrae.fr

To limit losses and wastes in the Fruit & Vegetable sector, the DeshyFruit project aims to study the feasibility of rotary drying applied to fruit purees to obtain powder or flakes, with four main focus:
- influence of the variety and of fruit ripening stage
- optimization of the drying parameters (contact time, addition of texturing agent (maltodextrin, starch,…)
- evolution of sensorial and nutritional qualities (fruit, powder, reconstituted puree)
- elaboration of a predictive processing model by spectral analysis (PfR, MIR)

Initial results obtained on apricot are presented.

**Drying process**

Apricot → Refining 3mm → Puree 1 → Refining 1mm → Puree 2 → Drying → Apricot film → Grinding → Apricot powder

**Apricot**

9 cultivars were selected for their various typology and harvested close to maturity

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Texture</th>
<th>Sugar</th>
<th>Tg (°C)</th>
<th>Visual quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medflo</td>
<td>sticky</td>
<td>5%</td>
<td>65.4</td>
<td>sticky powder</td>
</tr>
<tr>
<td>Jengat</td>
<td>powder</td>
<td>17.3</td>
<td>48.8</td>
<td>powder powder</td>
</tr>
<tr>
<td>Colomer</td>
<td>powder</td>
<td>3.3</td>
<td>48.9</td>
<td>powder powder</td>
</tr>
</tbody>
</table>

According apricot cultivars, refining yields varied from 90% (Medflo) to 50% (A4034) and drying process leads to obtaining a nice continuous film or a sticky paste (Fig1).

The drying conditions also influence the quality of the film. A minimum pressure of 5 bars seems necessary (equivalent to 150 °C) and better results were obtained with a 4 rpm rotation than 6 rpm.

**Glass-transition temperature Tg**

Tg characterizes the range of temperature over which the glass-transition occurs. It is analyzes by Differential Scanning Calorimetry-ThermoGravimetric Analysis (DCS-ATG).

**Process faisability**

Adding maltodextrin or starch to apricot puree before drying increases Tg and can provide technical assistance to obtain powders with good properties (less hygroscopic). This is not always necessary for apricot, making the film more difficult to peel off the roll, but must be adapted according cultivars and maturity stages.

**Fig 1:** Drying process for 2 apricot cultivars: A4049 (left) and A4034 (right).

The DUPRAT dryer allows continuous flash-drying by heating a puree on the surface of a cylinder heated by pressurized steam with a short contact time (fresh product / heated cylinder).

The drastic reduction in water activity allows long storage at room temperature of the dried flakes before rehydration, with a good microbiological stability.

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