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State diagrams of candied orange peel obtained using different hypertonic solutions

Teresa Witczak, Mariusz Witczak, Anna Stępień, Agata Bednarz, Mirosław Grzesik



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3 Teresa Witczak*, Mariusz Witczak, Anna Stępień, Agata Bednarz, Mirosław Grzesik

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5 *Department of Engineering and Machinery for Food Industry, University of Agriculture in*
6 *Krakow, Balicka 122, 30-149 Krakow, Poland*

7

8 *Corresponding author: Tel./Fax: +48 12 6624762. E-mail address: t.witczak@ur.krakow.pl
9 (T. Witczak).

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12 ABSTRACT

13 ~~In the present work~~ State diagrams were established for the candied orange peel obtained by
14 saturation with the sucrose or glucose-fructose syrup. ~~The~~ Differential scanning calorimetry
15 was used to determine the freezing points and glass transition temperatures in order to
16 generate freezing curve and glass transition curve. Curves were modelled by the Chen and
17 Gordon-Taylor equations. ~~plot the freezing curve (Chen equation) and glass transition curve~~
18 ~~(Gordon Taylor equation) as well as to establish parameters corresponding to the maximal~~
19 ~~freeze concentration (T_m' , T_g' , and X_s'). Maximal freeze concentration parameters The (X_w' ,
20 T_m' and T_g') values were determined from the state diagrams ~~were from~~ in the 0.185 to 0.218
21 kg water/kg sample; ~~from~~ -36.9 to -34.8°C; and ~~from~~ - 54.6 to -53.3°C range., respectively.
22 ~~They~~ All values depended on the individual sugar (glucose, fructose, sucrose, and maltose)
23 content. ~~in the products examined. The results obtained for the~~ Orange peel candied with
24 100% sucrose syrup showed that the glass transition curve can ~~be used to~~ predict a
25 ~~phenomenon of~~ sugar crystallization associated with an increase in moisture content in when
26 the product moisture content increases. The dependence ~~found~~ between the T_g value and
27 moisture content can be used to control the transformations occurring during storage of ~~the~~
28 products containing amorphous sugars. The glucose-fructose syrup applied during candying
29 ~~(already at 30% proportion) had reduced completely the prevented~~ sucrose recrystallization.~~

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31 *Keywords:* Candied orange peel, State diagram, Freezing curve, Glass transition, Freezable
32 water

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34 1. Introduction

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