1st International Meeting on I&D in the Food Sector

3º Workshop de I&D no Setor Agroalimentar

05 - Jun - 2018

Auditorium ESTGV

ABSTRACT BOOK

Raquel Guiné

Ana Cristina Ferrão

Caixa Geral de Depositos

CI&DETS

Editorial information

Edition
CI&DETS – Centro de Investigação em Educação, Tecnologias e Saúde
Instituto Politécnico de Viseu
Viseu, Portugal

Editorial Coordination
Raquel Guiné

Authors
Raquel Guiné, Ana Cristina Ferrão

Composition
Raquel Guiné

Cover
Raquel Guiné

ISBN 978-989-96937-4-6

Copyright © 2018

Free distribution

May 2018

Conference Website

www.esav.ipv.pt/idfs

Design & Contents
Raquel Guiné

Creation & Maintenance
Tiago Moreira

DEVELOPMENT OF JELLY FRUITS MADE WITH RED BERRIES AND AROMATIC HERBS: TEXTURAL ANALYSIS

Cátia Reis[1,2], Paula Correia[1,2], Sofia Florença[3], Raquel Guiné[1,2]

[1]*Dep. Food Industry, ESAV, Polytechnic Institute of Viseu, Portugal*

[2]*CI&DETS and CERNAS Research Centres, Polytechnic Institute of Viseu, Portugal*

[3]*Faculty of Nutrition Sciences, University of Porto, Portugal*

Abstract

Jelly gums, jelly sweets, jelly candies, jelly fruits or fruit candies are different nomenclatures for the same type of product, essentially comprising systems with a gel-like structure. Their composition includes fruits, many diverse, in amounts of 45% or over (m/m), sugars (maximum of 55%, m/m), a gelling agent - usually pectin and organic acids, for definition of taste. These candy products include a wide variety of forms, textures, compositions and colors, being highly appreciated due to their appearance, as well as flavor and texture. Undoubtedly they constitute a relevant segment of the confectionery market being consumed by heterogeneous groups, from very early ages to elderly people (Cappa et al., 2015).

Conventional jelly fruits may bring health problems due to their high sugar content, and that is a problem in a context of necessity to redesign foods so as to provide more effective and efficient obesity prevention. Obesity is recognized by the World Health Organization as one of the global noncommunicable diseases (Kushner and Kahan, 2018). Hence, there has been an increasing focus in the development of new foods with a healthier nutritional composition, lowering sugar and saturated fat content, and preferably that bring additional bioactive properties (Cappa et al., 2015).

Red berries have been widely studied for their high contents in many bioactive compounds, and most especially phenolic compounds, which are divided into different classes: phenolic acids, stilbenes, lignans, flavonoids and tannins. Anthocyanins, which belong to the class of flavonoids, are natural colorants present in many small fruits and berries. Maier et al. (2009) incorporated anthocyanin extracts into gelatine and pectin gels and observed that anthocyanins constitute an encouraging alternative to synthetic colorants, further bringing additional health effects for consumers (Xie et al., 2018).

The objective of this work was to develop some jelly gums made with red berries and aromatic herbs and herbs and without addition of sugar. Furthermore, and because of the crucial role of

texture for consumer acceptance of new foods, and particularly products with a gel-like texture, the textural properties of the developed products were evaluated, by means of two different instrumental tests.

Four gum formulations were developed, using red berries and aromatic herbs namely: Strawberry & Anise, Strawberry & Mint, Raspberry & Mint, Blueberry & Mint. They were shaped on a cubic shape, with dimensions of 3 cm length, 1.5 cm wide and 1 cm height. For the measurement of textural parameters was used a texturometer TA-XT2 (Stable Microsystems) and compression and puncture tests were performed on 20 jelly fruits of each variety, with measurements made on both sides. For the compression test a flat P/75 (75 mm) probe was used and for the puncture test a P/2 (2 mm) probe was used. The results were processed using Exponent software TEE from Stable Micro Systems. The textural properties hardness, adhesiveness, resilience, springiness, cohesiveness and chewiness were determined through the graph obtained for the compression test (Figure 1). The textural properties crust firmness, flesh firmness, adhesiveness and stickiness were determined through the graph obtained for the puncture test (Figure 2).

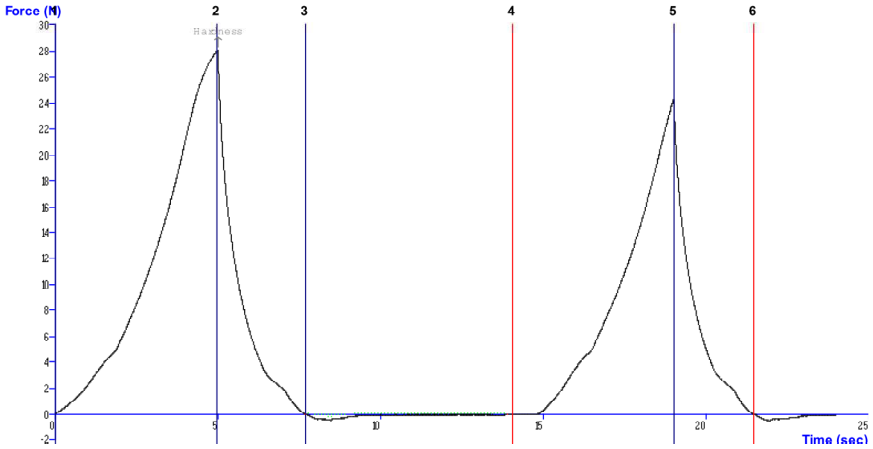

Figure 1. Example of a texture profile analysis for Strawberry & Anise jelly gum, obtained by compression.

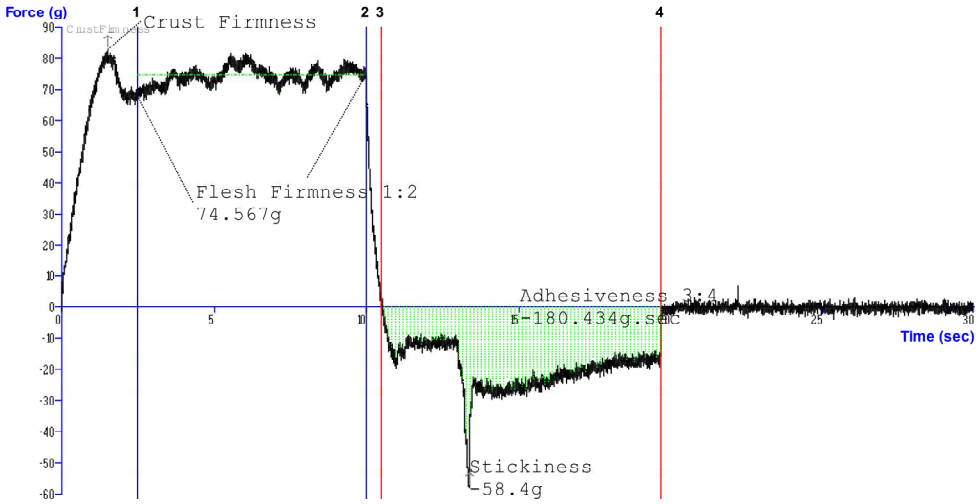

Figure 2. Example of a texture profile analysis for Blueberry & Mint jelly gum, obtained by puncture.

The results confirmed that these products were successfully developed, having good appearance and organoleptic properties, including a pleasant texture. Regarding the textural properties, some differences were found between the top and bottom faces. The compression test revealed that the Strawberry & Anise gums were softer, more adhesive and less resilient, while the puncture test showed that the Strawberry & Mint gums had highest adhesiveness but lowest stickiness. Additionally, very strong correlations (determined with SPSS software V25) were found between some of the properties determined by compression: chewiness *versus* hardness (r = 0.861) and cohesiveness *versus* resilience (r = 0.822); and moderate correlations were observed for most of the properties determined by the puncture test: crust firmness *versus* inner firmness, adhesiveness and stickiness (r = 0.459, r = -0.447, r = -0.458, respectively), and inner firmness *versus* adhesiveness (r = -0.502).

References

Cappa C, Lavelli V, Mariotti M. (2015) Fruit candies enriched with grape skin powders: physicochemical properties. LWT - Food Science and Technology, 62 (1), 569–575.

Kushner RF, Kahan s. (2018) Introduction: The State of Obesity in 2017. Medical Clinics of North America, 102 (1), 1–11.

Maier T, Schieber A, Kammerer DR, Carle R. (2009) Residues of grape (Vitis vinifera L.) seed oil production as a valuable source of phenolic antioxidants. Food Chemistry, 112 (3), 551–559.