

Accepted Manuscript

Evaluation of non-thermal effects of electricity on ascorbic acid and carotenoid degradation in acerola pulp during ohmic heating

Débora Pez Jaeschke, Ligia Damasceno Ferreira Marczak, Giovana Domeneghini Mercali

PII: S0308-8146(15)30262-4

DOI: <http://dx.doi.org/10.1016/j.foodchem.2015.11.117>

Reference: FOCH 18458

To appear in: *Food Chemistry*

Received Date: 26 May 2015

Revised Date: 14 October 2015

Accepted Date: 26 November 2015

Please cite this article as: Jaeschke, D.P., Marczak, L.D.F., Mercali, G.D., Evaluation of non-thermal effects of electricity on ascorbic acid and carotenoid degradation in acerola pulp during ohmic heating, *Food Chemistry* (2015), doi: <http://dx.doi.org/10.1016/j.foodchem.2015.11.117>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



1 **Evaluation of non-thermal effects of electricity on ascorbic acid and carotenoid**
2 **degradation in acerola pulp during ohmic heating**

3 Débora Pez Jaeschke^{1*}, Ligia Damasceno Ferreira Marczak¹, Giovana Domenechini

4 Mercali²

5 ¹Chemical Engineering Department, Federal University of Rio Grande do Sul, Rua Engenheiro Luiz Englert s/n -
6 Porto Alegre, RS 90040-040 – Brazil.

7 ²Department of Food Science and Technology, Federal University of Rio Grande do Sul, Bento Gonçalves Avenue,
8 9500 – Campus do Vale – Building 43.212, Porto Alegre, RS 91501-970 - Brazil.

9 *Corresponding author. Tel.: +55 51 3308-5155; Fax: +55 51 3308-3277

10 E-mail address: deborapj@enq.ufrgs.br (Débora Pez Jaeschke)

11 **Abstract**

12 The effect of electric field on ascorbic acid and carotenoid degradation in acerola pulp
13 during ohmic heating was evaluated. Ascorbic acid kinetic degradation was evaluated at
14 80, 85, 90 and 95°C during 60 minutes of thermal treatment by ohmic and conventional
15 heating. Carotenoid degradation was evaluated at 90 and 95°C after 50 minutes of
16 treatment. The different temperatures evaluated showed the same effect on degradation
17 rates. To investigate the influence of oxygen concentration on the degradation process,
18 ohmic heating was also carried out under rich and poor oxygen modified atmospheres at
19 90°C. Ascorbic acid and carotenoid degradation was higher under a rich oxygen
20 atmosphere, indicating that oxygen is the limiting reagent of the degradation reaction.
21 Ascorbic acid and carotenoid degradation was similar for both heating technologies,
22 demonstrating that the presence of the oscillating electric field did not influence the
23 mechanisms and rates of reactions associated with the degradation process.

24
25 **Keywords:** ohmic heating; ascorbic acid; carotenoid; acerola pulp.

26 **1. Introduction**

27 Acerola is a fruit rich in antioxidant compounds, such as vitamins, carotenoids
28 and polyphenols. Acerola is found in South and Central America with some of the
29 largest plantings in Brazil due to its good adaptation to soil and climate. It is well
30 known as a rich source of vitamin C but, recently, much attention has been paid to the
31 carotenoid content due to their antioxidant properties (Hanamura, Uchida, & Aoki,
32 2008; T. Mezadri, Villaño, Fernández-Pachón, García-Parrilla, & Troncoso, 2008). In
33 Brazil, this fruit has a great economic importance, as it is both consumed *in natura* and

Download English Version:

<https://daneshyari.com/en/article/7589669>

Download Persian Version:

<https://daneshyari.com/article/7589669>

[Daneshyari.com](https://daneshyari.com)