

Accepted Manuscript

High-throughput assay comparison and standardization for metal chelating capacity screening: a proposal and application

Jânio Sousa Santos, Vitor Rafael Brizola, Daniel Granato

PII: S0308-8146(16)31113-X
DOI: <http://dx.doi.org/10.1016/j.foodchem.2016.07.091>
Reference: FOCH 19552

To appear in: *Food Chemistry*

Received Date: 4 January 2016
Revised Date: 12 May 2016
Accepted Date: 12 July 2016

Please cite this article as: Santos, J.S., Brizola, V.R., Granato, D., High-throughput assay comparison and standardization for metal chelating capacity screening: a proposal and application, *Food Chemistry* (2016), doi: <http://dx.doi.org/10.1016/j.foodchem.2016.07.091>

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 **HIGH-THROUGHPUT ASSAY COMPARISON AND STANDARDIZATION**
2 **FOR METAL CHELATING CAPACITY SCREENING: A PROPOSAL AND**
3 **APPLICATION**

4 Jânio Sousa Santos¹, Vitor Rafael Brizola², Daniel Granato^{1,2*}

5
6 ¹Food Science and Technology Graduate Program, State University of Ponta
7 Grossa. Av. Carlos Cavalcanti, 4748, 84030-900, Uvaranas Campus, Ponta
8 Grossa, PR, Brazil.

9 ²Department of Food Engineering, State University of Ponta Grossa. Av. Carlos
10 Cavalcanti, 4748, 84030-900, Uvaranas Campus, Ponta Grossa, PR, Brazil. E-
11 mail: dgranato@uepg.br. Tel: +55 42 3220-3725

12
13 **Abstract**

14 Aiming to standardize the experimental protocols to assess the ability to chelate
15 Fe²⁺ and Cu²⁺ using 96-well microplates, we analyzed Brazilian coffees (n=20)
16 as a study-case in relation to their antioxidant activity using conventional
17 methods (DPPH and FRAP assays) and correlated the results with the total
18 phenolic content (TPC) using bivariate and multivariate statistical approaches.
19 Complementarily, we assessed the precision, reproducibility, accuracy, and
20 linearity of both methods. Data showed that the proposed assays presented a
21 good repeatability and reproducibility (<7% RSD) and recovery values of
22 96.66% and 98.91% for the iron and copper assays, respectively. Both methods
23 were linear in the range of 0 to 100 mg EDTA equivalents/L. Cu²⁺-chelating
24 ability was significantly correlated to FRAP, DPPH, and TPC, while sparse
25 (p<0.05) correlations were obtained with Fe²⁺-chelating ability. Overall, both

Download English Version:

<https://daneshyari.com/en/article/7587521>

Download Persian Version:

<https://daneshyari.com/article/7587521>

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