# 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

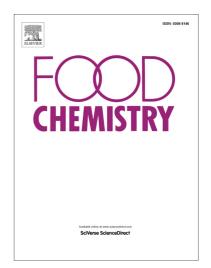
PII: S0308-8146(16)31113-X

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.

## HIGH-THROUGHPUT ASSAY COMPARISON AND STANDARDIZATION

## FOR METAL CHELATING CAPACITY SCREENING: A PROPOSAL AND

2	
3	APPLICATION

Jânio Sousa Santos<sup>1</sup>, Vitor Rafael Brizola<sup>2</sup>, Daniel Granato<sup>1,2\*</sup>

5

1

2

- <sup>1</sup>Food Science and Technology Graduate Program, State University of Ponta
- 7 Grossa. Av. Carlos Cavalcanti, 4748, 84030-900, Uvaranas Campus, Ponta
- 8 Grossa, PR, Brazil.
- <sup>2</sup>Department 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 Fe<sup>2+</sup> and Cu<sup>2+</sup> using 96-well microplates, we analyzed Brazilian coffees (n=20)
- as a study-case in relation to their antioxidant activity using conventional
- 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
- were linear in the range of 0 to 100 mg EDTA equivalents/L. Cu<sup>2+</sup>-chelating
- 24 ability was significantly correlated to FRAP, DPPH, and TPC, while sparse
- 25 (p<0.05) correlations were obtained with Fe<sup>2+</sup>-chelating ability. Overall, both

# Download English Version:

# https://daneshyari.com/en/article/7587521

Download Persian Version:

https://daneshyari.com/article/7587521

Daneshyari.com