

Accepted Manuscript

Analytical methods

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M.A. Prieto, J.A. Vázquez, M.A. Murado

PII: S0308-8146(14)01013-9

DOI: <http://dx.doi.org/10.1016/j.foodchem.2014.06.114>

Reference: FOCH 16056

To appear in: *Food Chemistry*

Received Date: 21 August 2012

Revised Date: 9 June 2014

Accepted Date: 29 June 2014



Please cite this article as: Prieto, M.A., Vázquez, J.A., Murado, M.A., Crocin bleaching antioxidant assay revisited: Application to microplate to analyze antioxidant and pro-oxidant activities, *Food Chemistry* (2014), doi: <http://dx.doi.org/10.1016/j.foodchem.2014.06.114>

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Crocin bleaching antioxidant assay revisited: Application to microplate to analyze antioxidant and pro-oxidant activities.

M.A. Prieto, J.A. Vázquez & M.A. Murado

Grupo de Reciclado e Valorización de Materiais Residuais (REVAL)

Instituto de Investigacións Mariñas (CSIC)

r/Eduardo Cabello, 6. Vigo-36208, Galicia, Spain

*Author to whom correspondence should be addressed

E-mail: michaelumangelum@gmail.com

Tel.: +34986214469; +34986231930

Fax: +34986292762

ABSTRACT

The crocin bleaching assay (CBA) is a common method for evaluating the antioxidant activity of hydrosoluble samples. It is criticized due to its low reproducibility, problematic quantification of results, differences in reagent preparation, doubtful need for a preheating phase and sensitivity to factors such as temperature, pH, solvents and metals. Here, the critical points of the method were extensively revised, and a highly reproducible procedure for microplate readers redeveloped. The problems of using quantification procedures, disregarding kinetic considerations, are discussed in detail and a model is proposed for quantifying simultaneously anti- and pro-oxidant activities as function of concentration and time. Thus, the combined use of a reproducible procedure and robust mathematical modeling produced consistent and meaningful criteria for comparative characterization of any oxidation modifier, taking into account the dose-time-dependent behavior. The method was verified by characterizing several commercial antioxidants and some

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