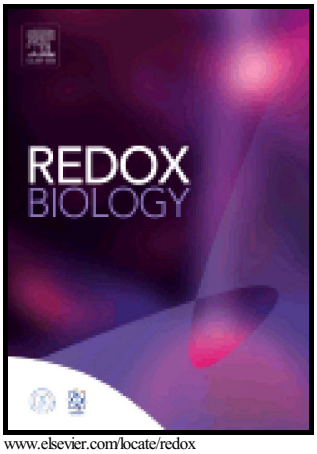

www.elsevier.com/locate/redox

Plant Peroxisomes: a nitro-oxidative cocktail

Francisco J Corpas, Juan B Barroso, José M Palma, Marta Rodriguez-Ruiz

PII: S2213-2317(16)30370-6
DOI: http://dx.doi.org/10.1016/j.redox.2016.12.033
Reference: REDOX541

To appear in: *Redox Biology*

Received date: 28 November 2016
Revised date: 28 December 2016
Accepted date: 30 December 2016

Cite this article as: Francisco J Corpas, Juan B Barroso, José M Palma and Mart Rodriguez-Ruiz, Plant Peroxisomes: a nitro-oxidative cocktail, *Redox Biology* http://dx.doi.org/10.1016/j.redox.2016.12.033

Plant Peroxisomes: a nitro-oxidative cocktail

Francisco J Corpas[1*], Juan B Barroso[2], José M Palma[1], Marta Rodriguez-Ruiz[1]

[1]Group of Antioxidants, Free Radicals and Nitric Oxide in Biotechnology, Food and Agriculture, Department of Biochemistry, Cell and Molecular Biology of Plants, Estación Experimental del Zaidín, CSIC, C/ Profesor Albareda, 1, 18008 Granada, Spain.

[2]Biochemistry and Cell Signaling in Nitric Oxide Group, Department of Experimental Biology, Center for Advanced Studies in Olive Grove and Olive Oils, Faculty of Experimental Sciences, Campus Universitario "Las Lagunillas" s/n, University of Jaén, E-23071, Jaén, Spain.

*Corresponding author: Dr. Francisco Javier Corpas, Departamento de Bioquímica, Biología Celular y Molecular de Plantas, Estación Experimental del Zaidín (CSIC), C/ Profesor Albareda, 1 E-18008 Granada, SPAIN. Fax: 34 958 181600; E-mail: javier.corpas@eez.csic.es)

Abstract

Although peroxisomes are very simple organelles, research on different species has provided us with an understanding of their importance in terms of cell viability. In addition to the significant role played by plant peroxisomes in the metabolism of reactive oxygen species (ROS), data gathered over the last two decades show that these organelles are an endogenous source of nitric oxide (NO) and related molecules called reactive nitrogen species (RNS). Molecules such as NO and H_2O_2 act as retrograde signals among the different cellular compartments, thus facilitating integral cellular adaptation to physiological and environmental changes. However, under nitro-oxidative conditions, part of this network can be overloaded, possibly leading to cellular damage and even cell death. This review aims to update our knowledge of the ROS/RNS metabolism, whose important role in plant peroxisomes is still underestimated. However, this pioneering approach, in which key elements such as β-oxidation, superoxide dismutase (SOD) and NO have been mainly described in