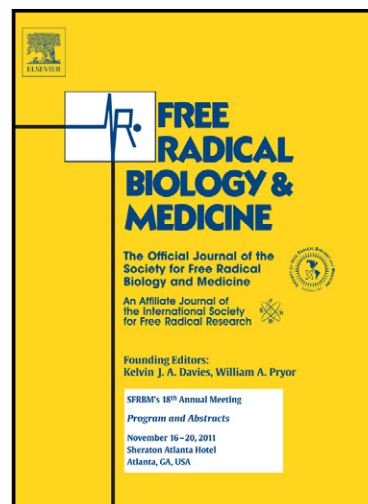


Author's Accepted Manuscript

Methods for determining the efficacy Of
Radical-Trapping Antioxidants

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PII: S0891-5849(15)00027-1

DOI: <http://dx.doi.org/10.1016/j.freeradbiomed.2015.01.020>

Reference: FRB12288

biomed

To appear in: *Free Radical Biology and Medicine*

Received date: 27 November 2014

Revised date: 20 January 2015

Accepted date: 22 January 2015

Cite this article as: Bo Li, Derek A. Pratt, Methods for determining the efficacy Of Radical-Trapping Antioxidants, *Free Radical Biology and Medicine*, <http://dx.doi.org/10.1016/j.freeradbiomed.2015.01.020>

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Methods for Determining the Efficacy of Radical-Trapping Antioxidants

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Abstract: Hydrocarbon autoxidation is the free radical chain reaction primarily responsible for the oxidative degradation of organic materials, including those that make up cells, tissues and organs. The identification of compounds which slow this process (antioxidants) and the quantitation of their efficacies have long been goals of academic and industrial researchers. Antioxidants are generally divided into two types: preventive and radical-trapping (also commonly referred to as chain-breaking). Preventive antioxidants slow the rate of initiation of autoxidation, whereas radical-trapping antioxidants slow the rate of propagation by reacting with chain-propagating peroxy radicals. The purpose of this review is to provide a comprehensive overview of different approaches to measure the kinetics of the reactions of radical-trapping antioxidants with peroxy radicals, and their use to study the inhibition of hydrocarbon (lipid) autoxidation in homogenous solution, as well as biphasic media (lipid bilayers) and cell culture. Both direct methods and indirect approaches are presented. Advantages and disadvantages of each method are discussed in order to facilitate method selection for investigators seeking to address particular questions in this immensely popular field.

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