

Anacardic Acids and Ferric Ion Chelation

Kazuo Tsujimoto^{a,*}, Akio Hayashi^a, Tae Joung Ha^b, and Isao Kubo^b

^a School of Material Sciences, Japan Advanced Institute of Science and Technology, Nomi, Ishikawa 923-1292, Japan. Fax: +81-761-51-1665. E-mail: tujimoto@jaist.ac.jp

^b Department of Environmental Science, Policy and Management, University of California, Berkeley, California 94720-3114, USA

* Author for correspondence and reprint requests

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6-Pentadeca(e)nylsalicylic acids isolated from the cashew *Anacardium occidentale* L. (Anacardiaceae), commonly known as anacardic acids, inhibited the linoleic acid peroxidation catalyzed by soybean lipoxygenase-1 (EC 1.13.11.12, type 1) competitively without prooxidant effects. Their parent compound, salicylic acid, did not have this inhibitory activity up to 800 μM , indicating that the pentadeca(e)nyl group is an essential element to elicit the activity. The inhibition is attributed to its ability to chelate iron in the enzyme. Thus, anacardic acids chelate iron in the active site of the enzyme and then the hydrophobic tail portion slowly begins to interact with the hydrophobic domain close to the active site. Formation of the anacardic acids-ferric ion complex was detected in the ratio of 2:1 as the base peak in the negative ion electrospray ionization mass spectrometry. Hence, anacardic acids inhibit both E_{ox} and E_{red} forms.

Key words: Anacardic Acids, Lipoxygenase, Iron, Deprotonated Molecule