

**Title** Determination of lipoxygenase, peroxidase activity in five different macadamia varieties after thermal processing

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### **Abstract**

Macadamia composes of large quantity of lipid therefore it is prone to rancidity. Rancidity can be occurred at any stages of post harvest treatment under favor conditions. Rancidity development in nuts can be influenced by several factors including light, oxygen, temperature, water activity. In addition there are some internal factors such as enzyme, substrate present in nuts that also needed to be considered as enzyme is a key catalyst of many chemical reactions in biological living organism. The objective of this experiment was to study the activities of lipoxygenase (LOX) and peroxidase (POX) presence in roasted and unroasted of five different Australian macadamia variety (Daddow, 246, 816,842 and A38). It is also aimed to determination the possible relation of each enzyme to one another. Methods used in this experiment were firstly extraction of crude enzyme by phosphate buffer followed by centrifugation of supernatant. The aliquot then was partial purified with ion exchange by using DEAE micro column. Each fraction of protein was collected. Analysis of activity and protein content of each enzyme was measured by spectrophotometric method with different substrates. Result indicated that Daddow variety exhibited highest LOX and POX activity. Roasted sample showed lower activity compared to unroasted sample in all samples. In addition there was no correlation between LOX and POX activity for all varieties studied. Enzyme activity was directly varied to protein content in both LOX and Pox. From the result it can be seen that enzyme activity was varied according to variety. However after roasting POX and LOX were deactivated, this indicated that roasting was sufficiently prohibited rancidity which catalyzed by POX and LOX in macadamia nut.