Thipthida Kaewtathip 2009: Factors Affecting Odor Changes in Frozen Pineapples. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Associate Professor Sanguansri Charoenrein, Ph.D. 111 pages.

Freezing is an excellent and fairly widespread method of preserving food products. However, the freezing of fruits may alter quality characteristics such as flavor and texture which, in turn could affect marketing potential. The report of IRPUS indicated that freeze-thawed pineapple obtained lower sensory scores in terms of flavor than fresh pineapple. The objective of this work was to study effect of freezing and thawing on odor changes in freeze-thawed pineapple. Odor change was determined by an electronic nose (e-nose), gas chromatography-mass spectrometry (GC-MS) and sensory evaluation. Two varieties of pineapple; Smooth Cayenne and Queen, three kinds of packaging; polypropylene, nylon and retort pouch, four freezing rates; slow freezing, quick freezing, very quick freezing and alternate freezing and three treatment of low temperature blanching; 60, 70 and 80ºC were used as factors in this study. Fresh pineapple was used as a control. The results showed that freezing and thawing had an effect on odor changes in pineapple. Smooth Cayenne had an effect on odor changes more than Queen. While packaging had no effects. Slow freezing induced higher odor changes than other freezing rates. However, at 30 days quick freezing, very quick freezing and alternate freezing induced more odor changes than 1 day. Storage time had no significant differences ($p<0.05$) on slow freezing. Aroma profiles of freeze-thawed pineapple determined by GC-MS showed that Smooth Cayenne had 14 volatile compounds and Queen had 27 volatile compounds. Freezing and thawing associated with the loss of some main characteristic and other volatile compounds in fresh pineapple. These main characteristic volatile compounds of fresh pineapple were methyl hexanoate, ethyl hexanoate, ethyl 3-methylthiopropanoate and 1,3,5-undecatriene. Blanching at 70°C can slightly reduced odor changes in frozen-thawed pineapple. Blanch Smooth Cayenne pineapple had less odor changes than Queen.

_____ _____ ___ / ___ / ___

Student's signature Thesis Advisor's signature