

Patcharaporn Tinjan 2007: Effect of Drying Methods on Free and Glycosidically-Bound Aroma Impact Compounds of Kaffir Lime Leaves (*Citrus hystrix* (DC.)). Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Assistant Professor Wannee Jirapakkul, Ph.D. 87 pages.

Kaffir lime leaf is a spice used in many Thai recipes. Unique odor of kaffir lime leaves are from free volatile compounds. They also have odorless glycoside form that could be changed into free form by many factors, such as, enzyme and heating processes. The purpose of this study was to study the effect of drying on aroma impact compounds in both free and glycosidically-bound forms of kaffir lime leaves. Two extraction methods, solvent extraction and solid phase extraction using Amberlite XAD-2 resin, were used to extract free and glycosidically-bound volatile compounds of fresh kaffir lime leaves. For solvent extraction method, 54 free and 39 glycosidically-bound volatile compounds were obtained and their odor descriptives related to kaffir lime leaf odors. For Amberlite XAD-2 resin, 50 free and 11 glycosidically-bound volatile compounds were obtained but most of them did not relate to volatile compounds in kaffir lime leaves.

For the study of aroma impact compound of fresh kaffir lime leaves by aroma extract dilution analysis (AEDA), citronellal and *l*-linalool had the highest log₃ FD factor values (4). The other compounds with high log₃ FD factor were α -pinene, sabinene, β -myrcene, *trans*-sabinene hydrate, β -citronellol, *trans*-geraniol, *trans*- β -caryophyllene, bicyclogermacrene and nerolidol with the values of 3. Effect of four drying methods, freeze drying, microwave assisted vacuum drying, oven drying and shade drying, were studied. Microwave assisted vacuum dried kaffir lime leaves had free aroma impact compounds similarly to fresh kaffir lime leaves but their glycosidically-bound aroma impact compounds were less than those of fresh sample. Freeze dried kaffir lime leaves had most of free and glycosidically-bound aroma impact compounds less than fresh and other dried samples. Oven dried kaffir lime leaves had less free aroma impact compounds than fresh sample but majority of free aroma impact compounds were higher than freeze dried sample. Most of glycosidically-bound aroma impact compounds of oven dried sample were less than fresh sample. Free and glycosidically-bound aroma impact compounds of shade dried kaffir lime leaves were comparable to those of fresh kaffir lime leaves, except citronellal that found in lesser amount than fresh and other dried samples.

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