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Sustainable Land Use and Rural Development in Mountainous Regions of Southeast Asia

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Effect of drying temperature on changes in volatile compounds of longan (*Dimocarpus longan* Lour.) fruit

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Introduction

Longan is a top-ten commercial fruit of Thailand. China is a major importer of Thai longan especially as dried unpeeled product with the value of about 35 million Euro in the year 2006. In China, dried longan aril is used mainly to prepare refreshing drink and longan tea. Its aroma plays an important role on the quality of product.

The objective of this study is focus on the impact of drying temperature on the volatile quality of dried unpeeled longan.

Materials and Methods

Fresh longan

Dried longan from 60, 70, 80 and 90°C

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flesh were cut into 2x2 mm and crushed into small pieces for 5 min

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added liquid nitrogen every 1 min during crushing

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Placed in a 20 ml vial (3 g for fresh and 13 g for dried samples)

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volatiles were extracted at 36°C for 45 min using SPME technique (65 μm PDMS/DVB fiber)

↓

GC-MS

Results

Table 1 Volatile compounds of fresh and dried longans.

Volatile compounds	Peak area per g dry basis				
	fresh longan	dried longan			
		60°C/55hr	70°C/33hr	80°C/22hr	90°C/19hr
Ethanol	7.68E+06	2.00E+07	2.14E+07	2.09E+07	2.35E+07
Ethyl Acetate	6.15E+05	1.40E+06	1.56E+06	2.13E+06	2.14E+06
Butanal, 3-methyl-	-	2.43E+06	3.83E+06	6.82E+06	8.38E+06
1-Butanol, 3-methyl-	-	7.19E+06	3.61E+06	-	-
Cyclopropanal, methylene-	-	-	1.41E+06	-	-
Butanoic acid, 3-hydroxy-, ethyl ester	-	2.20E+06	-	-	2.18E+06
1-Octen-3-ol	-	-	3.95E+06	2.30E+06	-
5-Hepten-2-one, 6-methyl-	-	1.68E+06	-	-	-
Benzoic acid, 3-methyl-2-trimethylsilyloxy-, trimethylsilyl ester	-	-	-	1.37E+06	-
Trans-β-ocimene	6.85E+05	4.44E+07	2.06E+06	1.34E+06	1.62E+06
Cis-β-ocimene	3.25E+07	1.21E+07	9.74E+07	5.76E+07	6.61E+07
Phenylethyl Alcohol	-	4.52E+06	7.78E+06	6.15E+06	5.53E+06
Allo-ocimene	-	-	8.68E+05	-	1.65E+06
Octanoic acid, ethyl ester	-	6.18E+05	6.36E+05	7.18E+05	6.32E+05

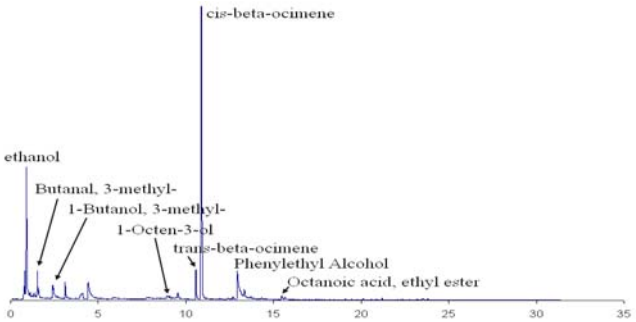

Figure 1 Chromatogram of dried longan aril dried at 70°C 33 hours.

Conclusion

The highest normalized amount (peak area) of volatile compounds in fresh and dried longan was β-ocimene. In dried longan, more volatile compounds were detected compared to the fresh fruit (Table 1). Many volatile compounds were produced during drying especially aldehyde, acid, ester and alcohol.

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Reference
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