

SIIC018

COMPARATIVE STUDY OF FRAGRANCE COMPOUND FROM MANGIFERA INDICA.L BY DIFFERENT METHOD EXTRACTION

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Abstract:

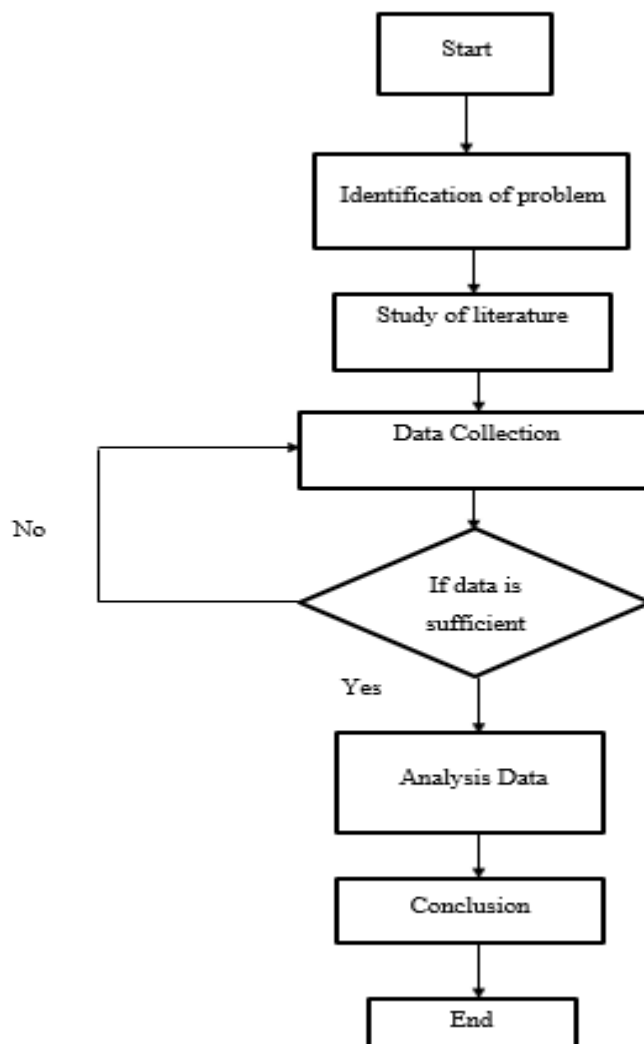
Mangifera Indica.L known as mangos where the genus and the family have been categorized as an Anacardiaceae. The genus Mangifera has contained several species that have edible fruit and the lower quality fruit is commonly known as wild mangos Mangifera India.L that has consisted chemical constituent include aliphatic compounds, terpenoids, flavonoids, alkaloids, coumarins, terpenoids saponins, polyphenolics, tannins, and essential oils. Mangifera Indica.L has fragrance compound or aromatic compound which it consists in more than 270 volatile compound that can be found where the sesquiterpenes and monoterpenes most abundance in these mangos. Monoterpenes compound consist limonene, β -pinene, δ -3-carene, α -phellandrene, β -myrcene, α -terpinene, α -terpinolene, β -phellandrene, (E)- β -ocimen and terpinene while sesquiterpenes consist β -caryophyllene, α -gurjunene, α -copaene, α -and caryophyllene. Three method of extraction of volatile compound would be compared such as simultaneous distillation, solid phase micro extraction and solvent extraction. These all compound have been detected and analyse using GC-MS where the fragrance compound of Mangifera Indica is identify. Simultaneous distillation–extraction (SDE) from three previous study which is total 29 compounds has been identify. The class of compound has been found were monoterpene, sesquiterpene, alcohol, aldehyde, acids and alkene. Solvent extraction have been found 19 volatile compounds of mango while Solid Phase Micro-extraction. (SPME) from previous study 21 compounds have been identify. The similarity of volatile compound identified in the three-method extraction only monoterpene such as beta phellandrene, beta myrcene, alpha thujene, δ -3-Caren, alpha-terpinene, limonene and terpinolene. The high yield extraction of Mangifera Indica.L determine using formulate after extraction from previous study. Solid phase Micro extraction has high yield extraction of volatile compound.

Keywords:

Mangifera Indica.L, Fragrance compound of mango, Simultaneous Distillation, Solid Phase Micro Extraction, Solvent extraction

Objectives:

- To analyze the yield of fragrance compound of Mangifera Indica.L via different extraction methods
- To investigate the properties of chemical constituents in the extracted fragrance compound of Mangifera indica.L using GC-MS.

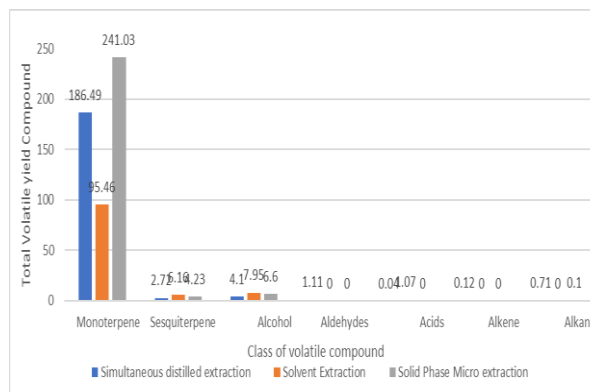
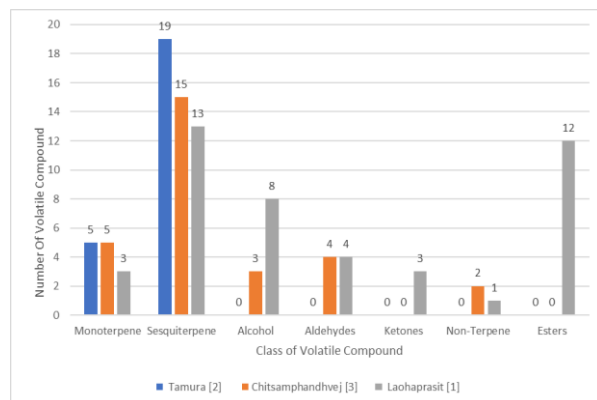
Methodology:**Results:**

Compound	Relative content%								
	Simultaneous distillation– extraction			Solid Phase Micro- extraction			Solvent extraction		
	[7]	[11]	[12]	[7]	[11]	[12]	[7]	[11]	[12]
2-ethoxy-Propane	0.55	-	-	-	-	-	-	-	-
1-methyl ester	-	-	-	-	-	-	1.07	-	-
Butanal,3-hydroxy	0.16	-	-	-	-	-	-	-	-
α -Pinene	0.43	0.93	-	-	-	-	1.07	0.81	-
β -pinene	-	-	-	-	-	2.71	3.20	-	-
Furfural	0.12	-	-	-	-	-	-	-	-
β -Myrcene	1.34	1.46	-	0.86	2.22	-	1.48	2.32	-

α -Thujene	1.02	-	-	0.97	-	-	1.30	-	-
A-gurjunene	-	-	-	-	-	0.38	-	-	-
Hydnocarpic acid	0.04	-	-	-	-	-	-	-	-
Ocimene	5.79	-	-	3.47	0.8	0.23	-	-	-
Trans-ocimen	-	-	-	-	-	-	6.46	0.25	0.22
δ -3-Carene	2.21	6.64	3.92	5.21	6.62	31.39	2.35	6.45	2.17
Limonene	2.68	1.87	0.23	4.35	2.14	1.04	2.40	1.64	0.04
cis-beta-Ocimen	0.16	0.21	-	-	-	-	-	-	-
1,3,6-Octatriene dimethyl	0.12	-	-	-	-	-	-	-	-
Terpinolen	81.77	70.46	-	82.09	68.90	9.54	73.65	77.46	0.04
γ -Terpinen	0.28	-	0.04	-	-	-	-	-	-
$\alpha,\alpha,4$ -trimethyl- Benzenemethanol	-	-	-	-	-	-	2.65-	-	-
2,6-bis(1,1-dimethylethyl)- 4-methyl- Benzenemethanol	-	-	-	-	-	-	1.00	-	-
2-trans-6-cis-Nonadiene	0.83	-	-	-	-	-	-	-	-
2,6-dimethyl-1,3,5,7- Octatetraene	0.12	-	-	-	-	-	-	-	-
Cyclohexane,1-ethenyl-1- methyl-2,4-bis(1- methylethenyl)	-	-	-	0.01	-	-	-	-	-
trans-citral	0.55	-	-	-	-	-	-	-	-
Germacrene D	-	-	-	0.08	-	0.02	1.50	-	-
Thujol	0.20	-	-	-	-	-	-	-	-
Caryophyllene	-	-	-	0.45	-	0.41	-	-	-
Trans- Caryophyllene	-	-	-	-	-	-	-	0.45	0.23
2-hydroxy limonene	0.35	-	-	-	-	-	-	-	-
Tridecane	0.16	-	-	-	-	-	-	-	-
Geraniol	0.32	-	-	-	-	-	-	-	-
Cis-citral	0.20	-	-	-	-	-	-	-	-
$\alpha,\alpha,4$ -trimethy- Benzenemethanol	0.51	-	-	-	-	-	-	-	-
α -terpinen	-	1.87	-	-	0.64	15.49	-	2.51	0.78
β -phelandrene	-	1.19	0.25	-	1.56	0.80	-	1.04	0.01
β -selinene	-	2.53	-	-	-	-	-	3.27	-
α -humulene	-	0.19	-	-	-	-	-	-	-
Humulene	-	-	-	0.15	0.19	-	-	-	-
Cubebene	-	-	-	0.09	-	0.01	-	-	-
Copaene	-	-	-	1.65	-	0.28	0.94	-	0.01
Cedrol	-	-	-	0.18	-	-	-	-	-
2-hexene-1-ol	-	-	-	-	0.68	-	-	-	-
1-hexanol	-	-	-	-	2.47	-	-	0.69	-
α -bisabolol	-	-	-	0.34	-	-	-	-	-
3-hexene-1-ol	-	2.90	-	-	-	-	0.92	1.62	-
1-hexene-1-ol	-	0.69	-	-	-	-	-	-	-
Total	99.91	90.94	4.44	99.99	89.67	62.3	99.91	90.94	4.44

Classification of volatile compound identified from GC-MS

Bar chart of total of yield from three method extraction previous study



Conclusion:

The major compound of volatile compounds of mangoes from the previous study terpinolene, isomer ocimene, limonene, δ -3-carene and beta-myrcene. For the three methods extraction which is simultaneous distillation extraction, solvent extraction and solid phase micro-extraction all methods have been found 6 component kinds of mango fragrance ingredient: beta-myrcene, alpha-Thujene, 3-carene, limonene, ocimene, terpinolene from the previous study while the similarity of volatile compound identified in this research of the three-method extraction only monoterpene such as beta phellandrene, beta myrcene, alpha thujene, δ -3-Carene, alpha-terpinene, limonene and terpinolene. The major class of volatile compound extraction was monoterpene with the sum of volatile compound value from the previous study 241.03% in solid phase micro method extraction while total volatile compound simultaneous extraction and solvent extraction were 186.05% and 95.46% respectively. The simultaneous distillation extraction has been identified major class of compound such as monoterpene, sesquiterpene, alcohol, aldehydes acids alkene and alkane. The three-method extraction has found 3 class of compound which is monoterpene, sesquiterpene and alcohol. Solvent extraction has least extract for acids with total 1.07% while solid phase extraction has least extraction for alkane which is the total 0.10 %.