

GAS-LIQUID CHROMATOGRAPHY OF FATTY ACIDS OF LEAVES OF ABROMA AUGUSTA LINN

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ABSTRACT: From the leaves of *Abroma augusta* Linn. (sterculiaceae), eight fatty acids, namely, lactic acid, myristic acid, palmitic acid, palmitoleic acid, stearic acid, oleic acid, linoleic acid and linolenic acid have been isolated and analysed for the first time by using gas-liquid chromatograph.

INTRODUCTION

Abroma augusta Linn. belongs to the family sterculiaceae. Its leaves have been used in the treatment of gonorrhoea in indigenous system of medicine¹. In homoeopathic system of medicine, the drug has been used in the treatment of diabetes² and a short proving with 200 potency suggested its value in allergic rhinitis, migraine and sinusitis³. Although an alkaloid⁴, taxaxerol, taxaxeryl acetate, B-sitosterol⁵, betaine, choline octa cosanol and aliphatic hydrocarbon⁶ have been isolated from the crude drug, its recent chemical study has been focused on fatty acids, resulting in the isolation of a number of fatty acids. This paper deals with the gas-liquid chromatography of the fatty acids.

The leaves of *Abroma augusta* were obtained from Bengal Botanical Drug House, Calcutta, and their authenticity confirmed by comparing the herbarium specimen by matching the characteristics with those given in *Flora of British India*⁷.

EXPERIMENTAL

Authenticated sample of the leaves of *Abroma augusta* were air-dried, pulverised and extracted with petroleum ether (40°-60°) for 12 hours using Soxhlet apparatus. The petroleum ether extract was concentrated under reduced pressure and the last traces of petroleum ether were removed under vacuum. The residue was refluxed with 10 per cent alcoholic potassium hydroxide for six hours. Finally it was cooled and diluted with 200 ml of water and extracted with four successive quantities of 50 ml of petroleum ether (40°-60°). The petroleum extract was washed with water till it gave no colour with phenolphthalein. The washings were mixed with aqueous layer and made acidic with dilute hydrochloric acid. This was subsequently extracted with petroleum ether. The petroleum ether extract was evaporated under reduced pressure. The residue was mixed with 50 ml of methanol and 2 ml of concentrated hydrochloric acid. The solution was refluxed for six hours, cooled and extracted with petroleum ether. The petroleum ether

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extract was concentrated under reduced pressure. Thin-layer-chromatography of this concentrate indicated the presence of 8 fatty acids. These fatty acids were identified to be laceric acid, myristic acid, palmitic acid, palmitoleic acid, stearic acid, oleic acid, linoleic acid and linolenic acid.

Gas-liquid chromatography of the fatty acids was performed. The various parameters for the fatty acids of *Abroma augusta* were: Column—apiezon L. on Chromosorb W.; Detector—F.I.D.; Carrier gas—Nitrogen; Column temperature 180°. The approximate percentage of the components identified is given in the table below.

G.L.C. of fatty acids of leaves of *A. augusta*

Peak No. of components ¹		% age of components ²
1. C 12:0	Laceric acid	1.14
2. C 14:0	Myristic acid	2.37
3. C 16:0	Palmitic acid	32.61
4. C 16:0	Palmitoleic acid	3.64
5. C 18:0	Stearic acid	5.50
6. C 18:1	Oleic acid	6.22
7. C 18:2	Linoleic acid	21.54
8. C 18:3	Linolenic acid	26.98

1. Identified on the basis of the retention time.

2. Calculated on the basis of the area of various peaks.

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REFERENCES

1. Nadkarni, K. M.: *Indian Materia Medica*, 1st ed., Popular Book Depot, Bombay.
2. Ghose, S. C.: *Drugs of Hindaasthan*, 3rd ed., p. 22, Hahnemann Publishing Co. Private Ltd., Calcutta.
3. Jugal Kishore: *Journal of Research in Indian Medicine*, VIII, (1) 97 (1973), CCRIMH, New Delhi.
4. Srivastava, G. P. and Basu, N. K.: *Indian Journal of Pharmacy*, 18, p. 472 (1956).
5. Ali S., Ahsan, A. M. and Hann, G.: *Palest. Journal of Scientific and Industrial Research*, 1, p. 305 (1958).
6. Dasgupta, B. and Basu, Krishna: *Experientia*, 26, p. 477 (1970).
7. Hooker, J. D.: *Flora of British India*, Vol. I, p. 375, L. Reeves & Co., London (1875).