

Review

Fatty acids isolated from *Milletia versicolor* Baker (Fabaceae)

Ongoka P. R.^{1,2}, Banzounzi J. T.³, Poupat, C.³, Ekouya, A.², Ouamba, J. M.² and Moudachirou, M.⁴

¹Département des Sciences Exactes, Ecole Normale Supérieure, Université Marien Nguouabi, BP 69, Brazzaville – Congo.

²Unité de chimie du végétal et de la vie, Faculté des Sciences, Université Marien Nguouabi, BP 69, Brazzaville – Congo.

³Institut de chimie de Substances Naturelles Gif/yvette France.

⁴Université d'Abomey Calavi, Cotonou – Bénin.

Accepted 11 July, 2006

***Milletia versicolor* Baker is a plant used in the Congolese traditional medicine for the treatment of intestine parasitosis. A chemical study carried out from its methanolic extract has concluded with the isolation using gas chromatography/mass spectrometry (GC/MS) of four organic acids; tetradecanoic acid, pentadecanoic acid, n-hexadecanoic acid and octadecanoic acid.**

Key words: *Milletia vesicolor*, organic acid, GC/MS.

INTRODUCTION

Milletia versicolor decoction is used in Congolese traditional medicine for the treatment of several diseases among which are intestine parasitosis, rheumatism and pain. It is also used as an anti inflammatory drug and in the treatment of female infertility (Adjanohoun et al., 1988; Bouquet, 1969.)

A preliminary chemical study (Ongoka et al., 2004) has revealed the presence of numerous secondary metabolites in the aqueous and alcoholic extracts such as flavonoids, tanins, polyphenols, saponines, terpenes and steroids. The pharmacological study carried out with those extracts has shown that they had a vermicide effect (Ongoka, 2005). This study was undertaken in order to isolate the fatty acids in the methanol extract.

METHODOLOGY

Milletia versicolor Baker leaves (Fabaceae) were collected in Mossaka area in the Cuvette Region (North of Congo). It has been authenticated by the Department of

Vegetable Biology and Physiology of the Université Marien Nguouabi where a voucher specimen has been deposited. These leaves were dried under shade and then ground into powder. This powder was used for the preparation of extracts.

A soxhlet extraction of 70 g of vegetal material was carried out with methanol. After eliminating the solvent, 10 g of a residue was obtained. 5 g of this methanolic extract were successively separated on Sephadex HL20 in a silicon column. Three fractions were obtained and they were analyzed by gas chromatography/mass spectrometry (GC/MS) in the following preparatory conditions: carries gas helium at a flow rate of 2 ml/min; temperature of 160°C (2 min) up to 280°C; and the solvent used is dichloromethane.

RESULTS AND DISCUSSION

The results obtained after analysis of the GC/MS have shown the presence of several compounds among which are four fatty acids: tetradecanoic acid, pentadecanoic acid, hexadecanoic acid and octadecanoic acid (Figure 1). These fatty acids are well known compounds but they were isolated for the first time from *M. versicolor* extract. However acids with long chain have been isolated by

*Corresponding authors E-mail: ongokapasal@yahoo.fr.

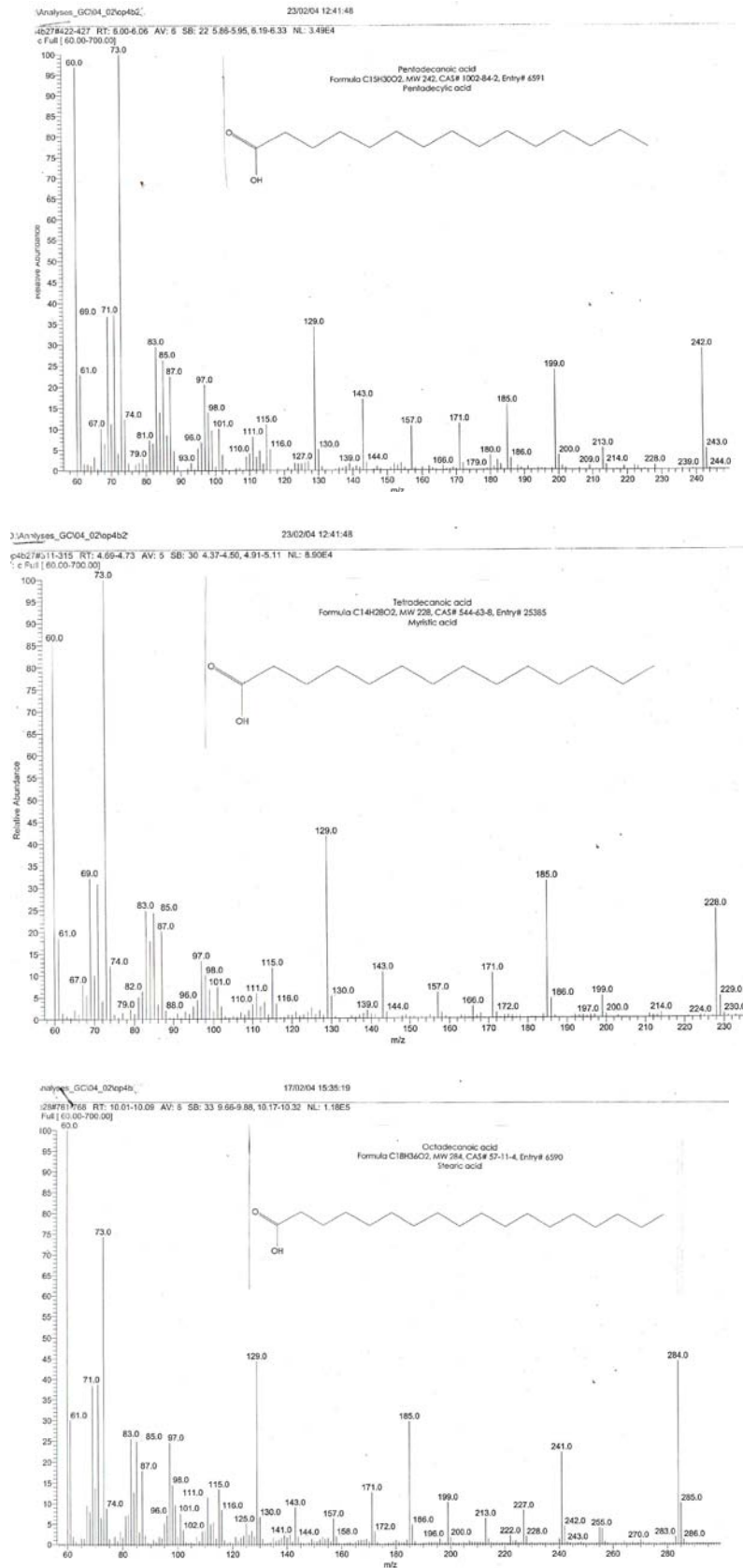


Figure 1. GC/MS analysis of methanolic extract of *Millettia versicolor* indicating four fatty acids: tetradecanoic, pentadecanoic, hexadecanoic and octadecanoic acids.

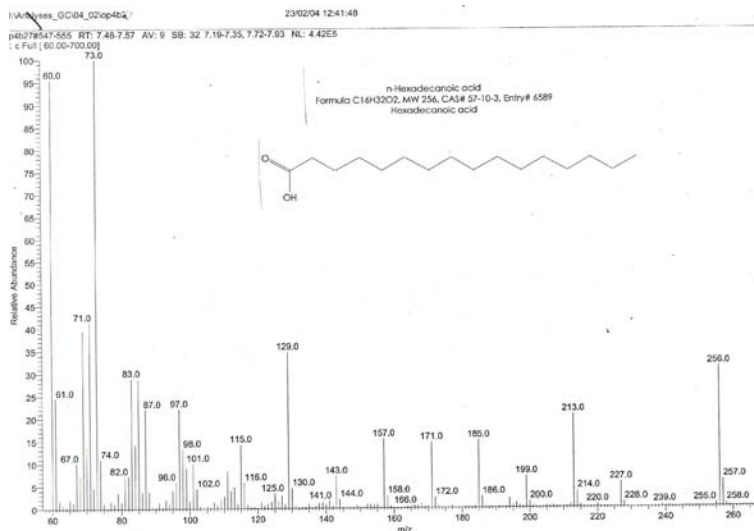


Figure 1 Contd. GC/MS analysis of methanolic extract of *Milletia versicolor* indicating four fatty acids: tetradecanoic, pentadecanoic, hexadecanoic and octadecanoic acids.

Vieux and Ngiefu (1970) from *Milletia laurentii*; these are palmitic acid, palmitoleic acid, stearic acid, oleic acid, linoic acid, arachidic acid and eicosanoic acid. The known acids isolated from extracts of plants are the ellagic and gallic acids which have aromatic kernels in their structure (Banzouzi et al., 2002; Pari and Moysse, 1976). Only ellagic acid has an antiparasitic activity. Other compounds which have already been isolated from *M. versicolor* include furoquinon (Tagatsind et al., 2003) which have anti inflammatory activity and a terpene, lupeol (Ekouya et al., 1990), whose biological activity is not known.

This study has permitted us to isolate four fatty acids with a linear chain from the methanolic extract of *M. versicolor*. Further investigation will be carried out in order to study their biological activities.

REFERENCES

- Adjanohoun EJ, Ahyi AMR, Ake Assi L, Moutsambote JM, Mpati J, Doulou V, Baniakina J (1988). Médecine traditionnelle et pharmacopée : contribution aux études ethnobotaniques et floristiques en République Populaire du Congo - Rapport ACCT Paris, p. 605.
- Bouquet A (1969). Féticheur et médecine traditionnelle du Congo Brazzaville. Mémoires ORSTOM, Paris; 36, 282.
- Ongoka PR, Ekouya A, Diatwa M, Bakoumasse-Ngamba G. et Atti R (2004). Etude chimique des plantes Médicinales : cas des plantes anthelminthiques du Congo Brazzaville. Rev. Méd. Pharm. Afr. 18: 161-167.
- Ongoka PR (2005). Etude Ethnobotanique, Pharmacologique et chimique des plantes. Anthelminthiques du Congo Brazzaville. Thèse de Doctorat d'Etat, Faculté Iira des Sciences. Université Marien Nguabi, Brazzaville – Congo. p. 171.
- Vieux A, Kabeké Ngiefu C (1970). Oil plants in the Democratic republic of the Congo. Univ. Lovanium, Kinshasa RDC. *Oleagineux* . 25 (7): 395-399.
- Banzouzi JT, Prado R, Menah, Valentin A, Roumestan C, Mallié Pelssier Y, Blache Y (2002). *In vitro* antiplasmodial activity of extracts of *Alchornea cordifolia* and identification of an active constituent: ellagic acid. *J. Ethnopharmacol*; 81(3): 399-401.
- Pari RR, Moysse H (1976). Précis de Matière Médicale. Pharmacologie Générale. Pharmacologie Spéciale.. Tome I. 2^{ème} Edition Masson. Paris, France.
- Tagatsind M, Yankep E, Najem D, Fomum T, Nyasse B, Bodo B, Reccio C, Giner RM, Rios J (2003). Identification of an Anti-inflammatory principle from the stem bark of *Milletia versicolor*. *Planta. Med.*; 69: 767-770.
- Ekouya A, Tchissambou L, Onanga M, Ouabonzi A, Ongoka P, Bayitoukou A (1990). *Milletia versicolor*: Etude chimique et pharmacologique. *Discovery and Innovation*. 2 (2): 45-47.