CHEMICAL INVESTIGATION OF *Parkia Biglobosa* FRUIT HULL USING GC-MS

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Abstract

Parkia biglobosa, also known as the African locust bean, is used for various purposes. This work is aimed at investigating the chemical constituents of different extract from *P. Biglobosa* fruit hull. The GC-MS results indicated highest similarity index with components of different extracts.The methanolic extract contained 1,2,3-Benzenetriol, Pentadecanoic acid, Hexadecanoic acid, Linoleic acid, 11-octadecenoic acid, Octadecanoic acid, Oleic acid Hexadecanoic acid, 1,11,13-octadecatriene, Decane,1-fluoro, 9-octadecenal, 13-octadecenal, 2-methyl-3,13-octadecadienol,while the N-hexane extract contained Hexadecanoic acid, 6-octadecenoic acid, Octadecanoic acid, Oleic acid, Octadecanoic acid, 1,11,13-octadecanoic acid, palmitin, 9-tetradecenal, Cis-9-hexadecenal, 9-octadecanoic acid.The aqueous extract contained 1,2,3-benzenetriol, Pentadecanoic acid, Hexadecanoic acid, 9,12-octadecadienoic acid, 11-octadecenoic acid, Octadecanoic acid, Oleic acid, Octadecanoic acid, 6,9-pentadecadien-1-ol, 1,11,13-octadecatriene, Decane,1-fluoro, 9-octadecenal, 9-tetradecenal, 9-octadecenoic acid-,2,3-dihydroxypropyl, The N butanolic extract contained 4-heptanone,3-methyl, Butanoic acid, Butane ,1,1-dibutoxy, 1,2,3-benzenetriol, Hexadecanoic acid, Oleic acid, 1,11,13-octadecatriene, Decane,1-fluoro, Hexadecenioic acid, Hexadecanoic acid, Hexanedioic acid,dioctyl ester, 9-octadecenal, Cis-9-hexasecenal, 9-tetradecenal.While the ethyl- acetate extract contained, 1,2,3-benzenetriol, 1-hexene,2,4,4-triethyl, Hexadecanoic acid, 11-octadecenoic acid, Oleic acid, Octadecanoic acid, 2,5-pentadecadien-1-ol, 1,11,13-octadecatriene, Decane,1-fluoro, Hexadecenoic acid, Hexadecane, 9-octadecenal, Cis-11-hexadecenal, Erucic acid and octacosane. The GC-MS result of *P. biglobosa* for aquoeus, hexane, ethyl-acetate extract of the bark showed several organic compounds and fatty acids. There were saturated, mono saturated and polyunsaturated fatty acids like: palmitic acid, stearic acid, oleic acid and linoleic acid were present in all the corganic aromatic compound like 1,2,3-benzenetriol were also detected.

Keywords: Parkia Biglobosa, Fruit hull, Exract, GC-MS

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investigation of *Parkia Biglobosa* fruit hull using GS-MS. American Journal of Research Communication, 2017, 5(2): 59-65} www.usa-journals.com, ISSN: 2325-4076.

INTRODUCTION

Parkia biglobosa, also known as the African locust bean or néré, iru in Yoruba , Ogiri in igbo and Dorowa in hausa, is a perennial deciduous tree of the Fabaceae family. It is found in a wide range of environments in Africa and is primarily grown for its pods that contain both a sweet pulp and valuable seeds. Where the tree is grown, the crushing and fermenting of these seeds constitutes an important economic activity among the locals. Various parts of the locust bean tree are used for medicinal purposes. As a standing tree, locust bean may have a positive effect on the yield of other nearby crops.(Agro forestry tree database 2013) . Indigenous healers in Africa use different parts of the locust bean tree for health benefits. (Karou etal 2011).

MATERIALS AND METHODS

Plant collection

The fruits of parkia biglobosa were collected from National Research Institute for Chemical Technology, Basawa Zaria.

Plant identification

Plant was identified by the department of bio-resources National Research Institute for Chemical Technology Zaria. Where a voucher number was obtained.

Sample preparation

The fruit were plucked and the fruit hull separated from the fruit peel, Pulp and seed, this was air dried under shade for a period of seven days after which it was pounded into powder and packaged ready for analysis.

REAGENT

All reagents used were of Analar grade

Methods of extraction

Standard method of AOAC (2010) was used for cold extraction.

Cold extraction using methanol, water, n-hexane, n-butanol and ethyl-acetate.

20g of finely ground sample was dissolved in 140ml of reagent in a 250ml conical flask and covered with aluminium foil paper for 24hrs with continuous shaking on a shaker after which it was filtered. The filtrate was concentrated on a water bath at 40^0C and labelled ready for GC-MS analysis.

GAS CHROMATOGAPHY AND MASS SPECTROPHOTOMETER

A GC-MS – QP2010 PLUS (Shimadzu Japan) was used for the instrumental analysis. A RTX-5ms column (5% diphenyl, 95% dimethylpolysiloxane stationary phase), 30m x 0.25mmi.d x 0.25um film thickness. (Restek, USA) was used. The column temperature program is as follows 70ºc raised at 10ºc/min to 240ºc, hold for 4min raised at 15ºc/min to 280ºc hold for 5min, with an injection temperature of 250ºc.The carrier gas used was helium with a flow rate of 40.8 ml/min. the detector was a quadrupole mass spectrometer (MS) with EI ionization at 70ev in full scan mode.

RESULTS AND DISCUSSIONS

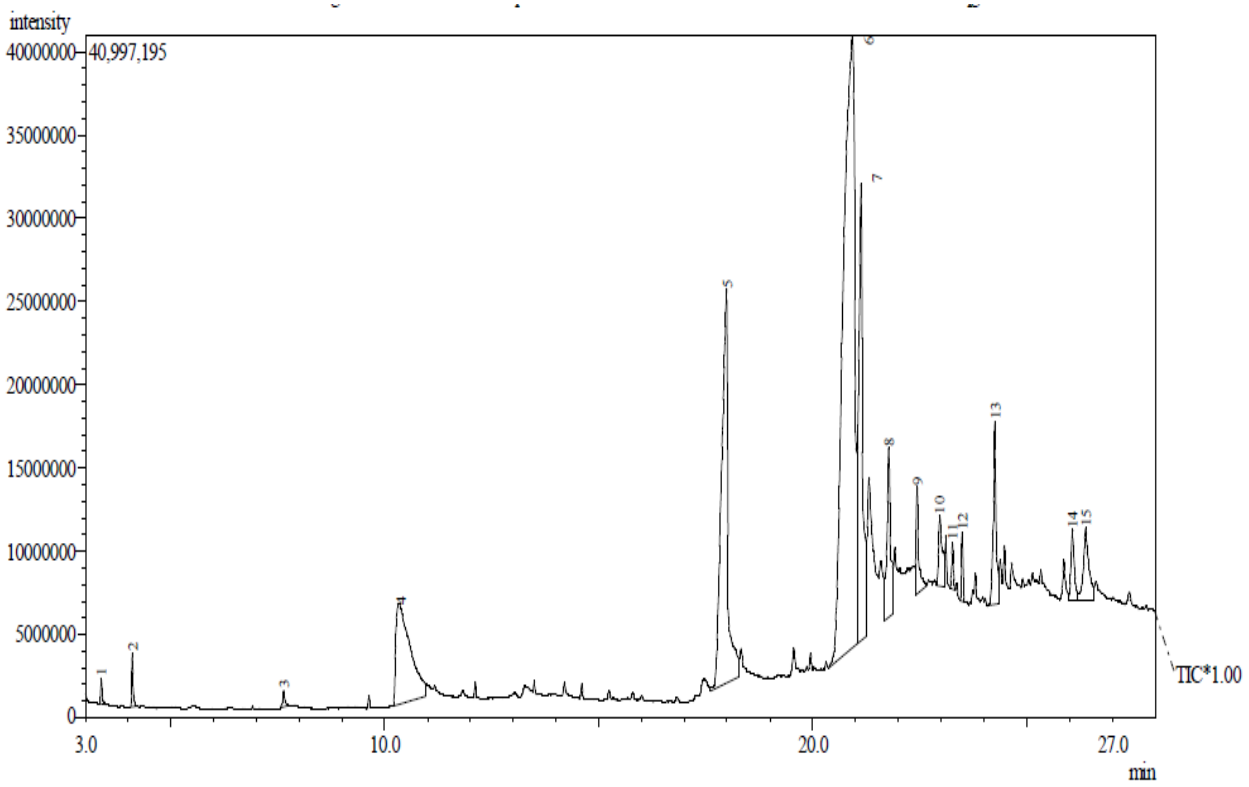

Fig. 1 chromatogram of n-butanol extract of *P.biglobosa* fruit hull.

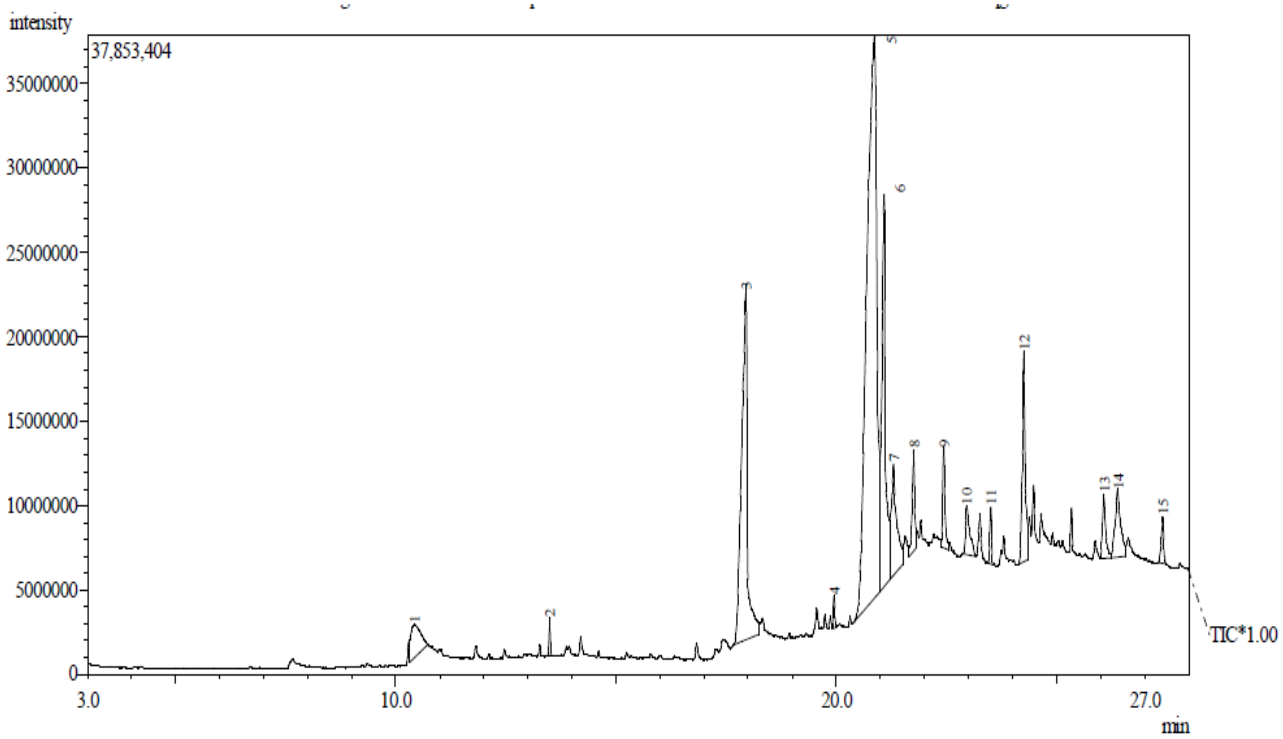

Fig. 2 chromatogram of ethyl acetate extract of *P.biglobosa* fruit hull.

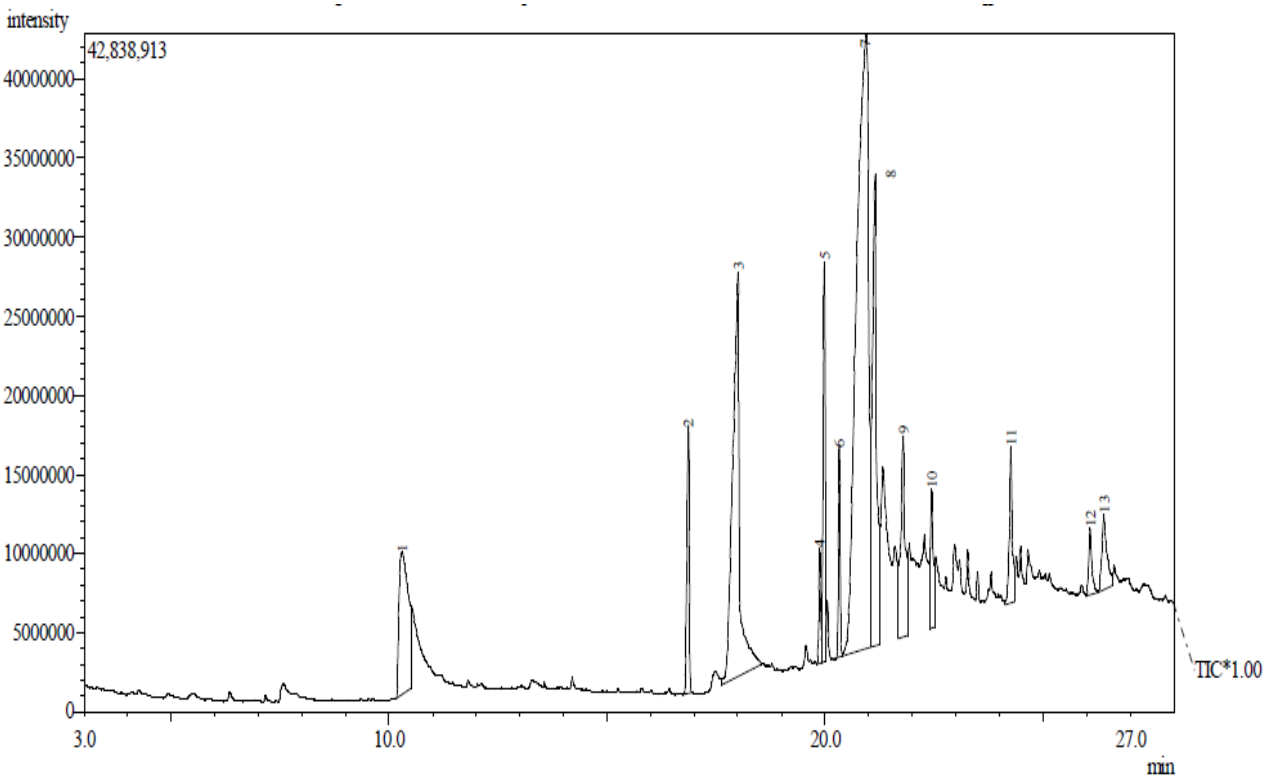

Fig. 3 chromatogram of methanolic extract of *P.biglobosa* fruit hull.

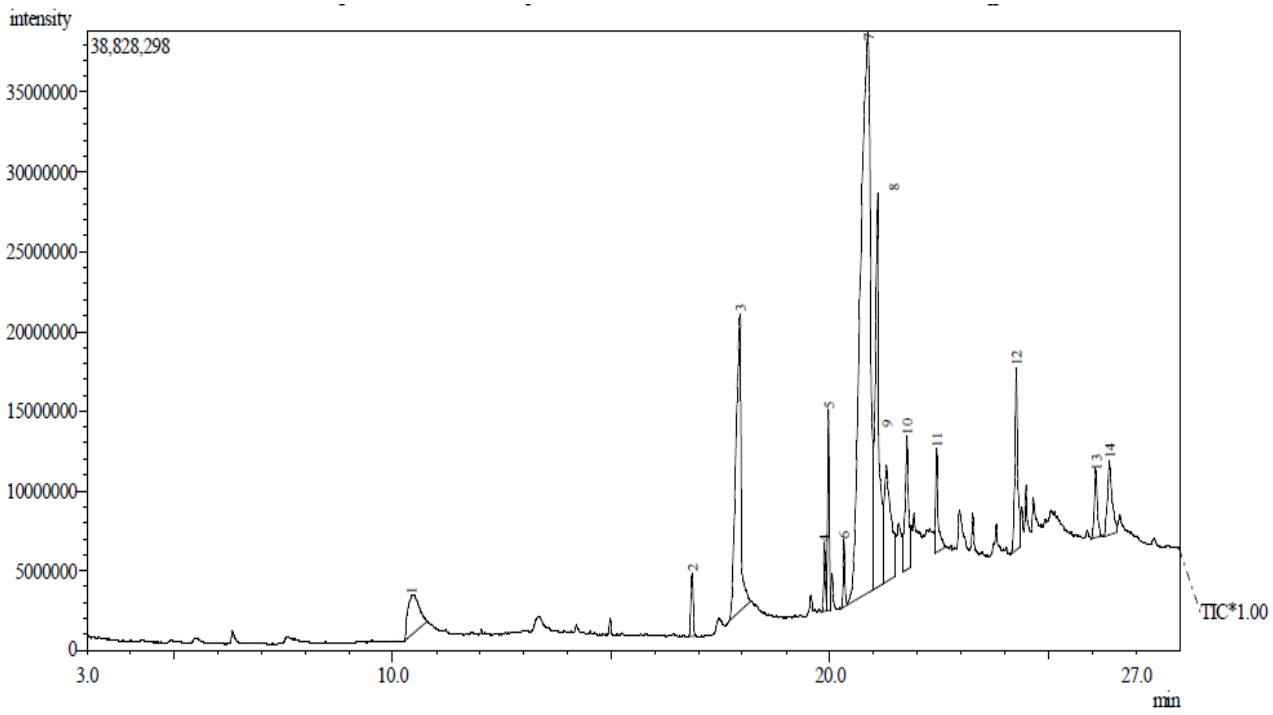

Fig. 4 chromatogram of aquoeus extract of *P.biglobosa* fruit hull.

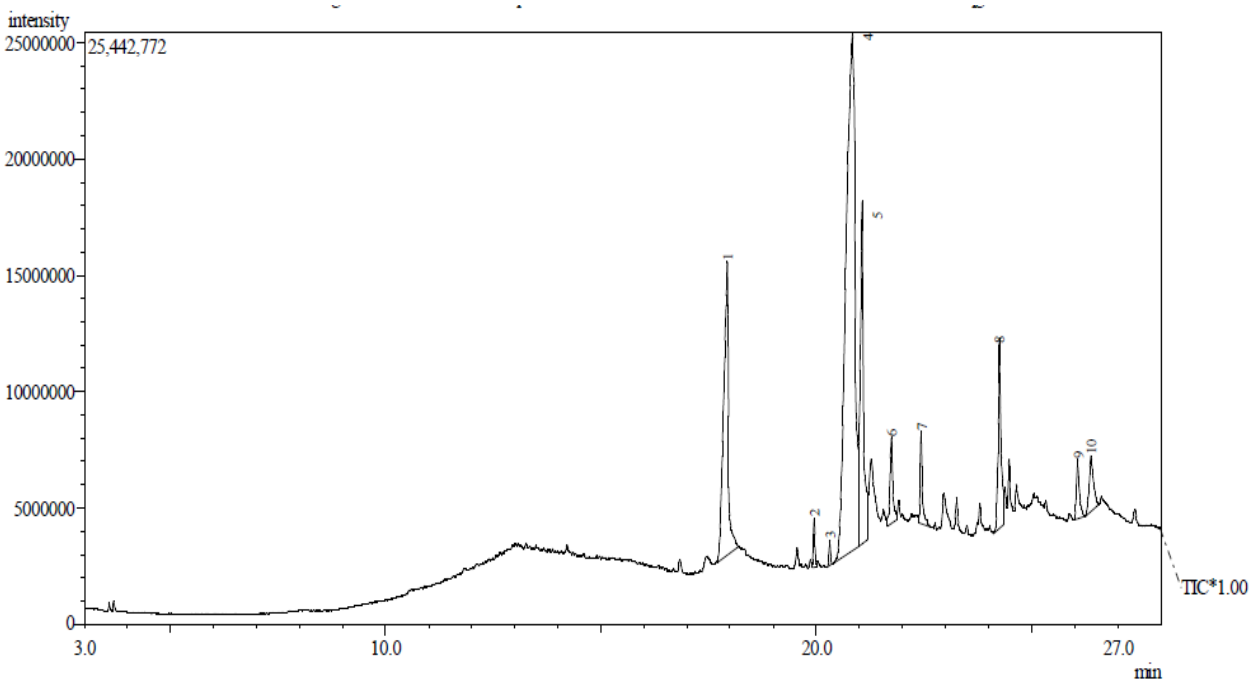

Fig. 5 chromatogram of n-hexane extract of *P.biglobosa* fruit hull.

DISCUSSION

The GC-MS results showed highest similarity index with components of different extract.The methanolic extract contained 1,2,3-Benzenetriol, Pentadecanoic acid, Hexadecanoic acid, Linoleic acid, 11-octadecenoic acid, Octadecanoic acid, Oleic acid Hexadecanoic acid, 1,11,13-octadecatriene, Decane,1-fluoro, 9-octadecenal, 13-octadecenal, 2-methyl-3,13-octadecadienol, N-hexane extract contained Hexadecanoic acid, 6-octadecenoic acid, Octadecanoic acid, Oleic acid, Octadecanoic acid, 1,11,13-octadecanoic acid, palmitin, 9-tetradecenal, Cis-9-hexadecenal, 9-octadecanoic acid. The aqueous extract found to have 1,2,3-benzenetriol, Pentadecanoic acid, Hexadecanoic acid, 9,12-octadecadienoic acid, 11-octadecenoic acid, Octadecanoic acid, Oleic acid, Octadecanoic acid, 6,9-pentadecadien-1-ol, 1,11,13-octadecatriene, Decane,1-fluoro, 9-octadecenal, 9-tetradecenal, 9-octadecenoic acid-,2,3-dihydroxypropyl, The N butanolic contain 4-heptanone,3-methyl, Butanoic acid, Butane ,1,1-dibutoxy, 1,2,3-benzenetriol, Hexadecanoic acid, Oleic acid, 1,11,13-octadecatriene, Decane,1-fluoro, Hexadecenioic acid, Hexadecanoic acid, Hexanedioic acid,dioctyl ester, 9-octadecenal, Cis-9-hexasecenal, 9-tetradecenal. While the ethyl- acetate extract contained, 1,2,3-benzenetriol, 1-hexene,2,4,4-triethyl, Hexadecanoic acid, 11-octadecenoic acid, Oleic acid, Octadecanoic acid, 2,5-pentadecadien-1-ol, 1,11,13-octadecatriene, Decane,1-fluoro, Hexadecenoic acid, Hexadecane, 9-octadecenal, Cis-11-hexadecenal, Erucic acid and octacosane. The GC-MS result of *P. biglobosa* for aquoeus, hexane, ethyl-acetate extract of the bark showed several organic compounds and fatty acids. There were saturated, mono saturated and polyunsaturated fatty acids like: palmitic acid, stearic acid, oleic acid and linoleic acid were present in all the organic aromatic compound like 1,2,3-benzenetriol were also detected. Hexadacanoic acid and oleic acid was found to reside in all the extract, while octadecanoic acid reside in all except n-butanolic extract.

CONCLUSION

P.biglobosa fruit hull though a waste, but rich in essential fatty acids such as oleic and linoleic acid can be harnessed, for economic purpose, as such further investigation on its edibility, utilization is important.

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