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CHEMICAL CONSTITUENTS OF ESSENTIAL OIL OF *CASSIA ARREREH DEL* AND *FICUS THONINGII BLUME*.

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ABSTRACT: *The essential oil from the leaves of* ***Cassia arrereh Del.*** *and* ***Ficus thoningii Blume*** *were analyzed using GC-MS. Eight compounds representing 100% of the essential oil from the leaves of Cassia arrereh Del, were characterized, with the major constituents as 10-methyl- Eicosane 32.50%, 2, 6, 10, 15-tetramethyl- Heptadecane 31.34 %, (R)-(-)-(2)-14-Methyl-8-hexadecen- 1-ol 12.73%. While ten compounds representing 99.99% of the essential oil from the leaves of Ficus thoningii Blume were characterized, with the major constituents as 2, 6,10, 15-tetramethyl- Heptadecane, 42.42 %, 9-methyl- Nonadecane,17.62%, Eicosane 16.17 %, , and methylsalicylate 10.58%. Although* ***Cassia arrereh Del.*** *and* ***Ficus thoningii Blume*** *belong to different families of Caleaslpiniaceae and Monaveae respectively, they both contained methylsalicylate and 2, 6,10, 15-tetramethyl- Heptadecane, 42.42 % in different proportions.*

KEYWORDS: Essential Oil, Cassai Arrerh Del, Ficus Thoningii Blume, Leaves

INTRODUCTION

All parts of the plant ***Cassia arrereh*** **Del** is used locally as medicine. The root and stem-bark are used in diseases conditions such as diarrhea, dysentery, stomach ache, ascites, headache, cough, rheumatism, back pain, wound healing, weakness, avian plague, yellow fever and malaria. The fruit pulp is used as laxative while the leaves are used as diuretic, antipyretic, analgesic and in the treatment of pleurisy and burns. The seed is used for treatment of pneumonia and for magico-religious purposes (Arbonnier, 2004 in Ngulde et al., 2010). In Nigeria, the leaves are used for the treatment of diarrhea, dysentery, dermatitis, malaria and skin infections. (De et al., 2009). Phytochemical investigation by Olusola et al., 2011 revealed the presence of alkaloids, flavonoids, anthraquinones, saponins, glycosides, tannins, carbohydrate and terpenes in ***Cassia arrereh*** **Del** , while elemental analysis revealed the presence of calcium (Ca), phosphorus (P), Manganese (Mn), Magnesium(Mg), Iron(Fe), Copper(Cu), and Zinc(Zn) in ***Cassia arrereh*** **Del**.(Olusola et al., 2011).

The ethnomedical uses of the leaves of ***Ficus thonningii Blume*** include treatment of sore throat, cold, diarrhea and dressing for cuts and wounds. (Onwkaeme & Udoh, 2000)**.** Phytochemical constituents identified were tannins, flavonoids, saponins, and anthraquinone glycosides in ***Ficus thonningii Blume***. (Onwkaeme & Udoh, 2000).

MATERIALS AND METHODS

Extraction and isolation of essential oil

Fresh leaves of ***Adansonia digitata*** **and** ***Sesamum alatum*** was obtained and dried at room temperature, powdered and hydrodistilled for 4 hours in a Clavenger apparatus.

Identification of the components

The identification of the chemical constituents was assigned on the basis of comparison of their retention indices and mass spectra with those given in the literature.

Gas Chromatography-Mass Spectrometric (GC-MS) analysis.

GC-MS (gas chromatography coupled with mass spectrometry) analyses were carried with a GC model Agilent 6890, equipped with MS model MSD 5973N The operating conditions were as follows: quadrupole temperature 150 Celsius, MSD ion source temperature 230 Celsius Sample inlet temperature 230 Celsius, sample inlet 0.59 psi, carrier gas flow 53.7 ml/min, flow velocity 39cm/sec, initial oven (column) temperature 75celsius, time spent at 75 Celsius 2min., rate of column heating 3degree/minutes, final oven (column) temperature 200celsius, time spent at 200 Celsius 10 min. total running time 53.67, column type DB-1MS with column length of 3 meters

RESULTS AND DISCUSSION

The essential oil from the leaves of ***Cassia arrereh Del.*** and ***Ficus thoningii Blume*** were analyzed using GC-MS. Eight compounds representing 100% of the essential oil from the leaves of *Cassia arrereh Del*, were characterized, with the major constituents as 10-methyl-Eicosane 32.50%, 2, 6, 10, 15-tetramethyl- Heptadecane 31.34 %, (R)-(-)-(2)-14-Methyl-8-hexadecen-1-ol 12.73%. While seven compounds representing 99.99% of the essential oil from the leaves of *Ficus thoningii Blume* were characterized, with the major constituents as 2, 6,10, 15-tetramethyl- Heptadecane, 42.42 %, 9-methyl- Nonadecane,17.62%, Eicosane 16.17 %, and methylsalicylate 10.58%. Although ***Cassia arrereh Del.*** and ***Ficus thoningii Blume*** belong to different families of Caleaslpiniaceae and Monaveae respectively, they both contained methylsalicylate and 2, 6,10, 15-tetramethyl- Heptadecane in different proportions.

These Essential oils containing monoterpene alcohols have good antiseptic, anti-viral and anti-fungal properties with very few side effects such as skin irritation or toxicity and have an uplifting energizing effect. These containing sesquiterpene have great properties, which include liver and glandular stimulant, anti-allergen and anti-inflammatory.

Monoterpene compounds have anti-inflammatory, antiseptic, antiviral and antibacterial therapeutic properties while some can be analgesic or stimulating with a tonic effect, it could be seen as a very broad generalization, since this large group of chemicals vary greatly. Since some have a stimulating effect on the mucus membranes they are also often used as decongestants. Methyl salicylate is a wintergreen-scented chemical found in many over-the-counter products. This product is used to treat minor aches and pains of the muscles/joints (e.g., arthritis, backache, sprains). Menthol and methyl salicylate are known as counterirritants. They

work by causing the skin to feel cool and then warm. These feelings on the skin distract you from feeling the aches/pains deeper in your muscles, joints, and tendons (WebMD 2005-2013).

Plants containing methyl salicylate produce organic ester (a combination of an organic acid with an alcohol) most likely as an anti-herbivore defense. If the plant is infected with herbivorous insects, the release of methyl salicylate may function as an aid in the recruitment of beneficial insects to kill the herbivorous insects. Aside from its toxicity, methyl salicylate may also be used by plants as a pheromone to warn other plants of pathogens such as tobacco mosaic virus. Numerous plants produce methyl salicylate in very small amounts. (Wikipedia, 2011).

Chemical constituents of essential oils of *Cassia arrereh Del.*and *Ficus. thoningii Blume*

Chemical Compounds composition (%)	RI		Percentage	
			C. arrereh Del and	
F. thoningii Blume.				
Methyl salicylate	870	4.97	10.58	
2, 5, 9-trimethyl- Decane,	1372	-	4.86	
2, 5, 9-trimethyl- Decane,	1608	-	3.17	
(R)- (-)-(2)-14-Methyl-8-hexadecen-1-ol	1635	12.73	-	
Methylphosphoric acid	1648	6.17	-	
3, 5, 24-trimethyl-Tetracontane	1875	3.50	-	
2-ethyl -2-methyl- Tridecanol	2007	4.08	-	
10-methyl- Eicosane	2068	32.50	-	
2, 6-dimethyl- Heptadecane	2188	4.71	5.27	
9-methyl-Nonadecane	2189	-	17.62	
2, 6, 10, 15-tetramethyl- Heptadecane	2366	31.34	42.42	
Eicosane	2440	-	16.17	

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