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Chemical Compositions and Physical Characteristics of Volatile Extracts of Leaves of *Psidium Guajava* Linn and *Lantana Camara* Linn of Benin

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ABSTRACT

*P. guajava*Linn.*L. camara*Linn.are twoaromatic plantsthat produce essential oilsandmajor medicinalutilitiesin Benin.Essential oilsobtainedby hydrodistillationof*P. guajava*and*L. camara*leaves collectedin Beninwere analyzed bygas chromatographyconnected to a flameionization detector(GC/FID) and gas chromatographycoupled with the mass spectrometry (GC/MS). The major compounds(> 10%) identified in the essential oils of*P. guajava*are limonene(10.9-20.7%), β-bisabolol(14.9-20.2%), epi-β-bisabolol(11.7-18.9%), (2E,6E)-farnesol(10.0%), β-bisabolene(10.0%). 1,8-cineole(23.4%), sabinene(15.9-21.5%), β-caryophyllene(10.9-19.3%), (Z)-β-ocimene(11.2-13.8%) were the major constituents(>10%) having marked the essential oils of*L.camara*. The physical characteristicsdeterminedhave varied, at the same time, according to the plant species andwithin the samplesforming ahomogeneouspopulationbotanically.

Keywords: *Psidiumguajava*, *Lantana camara*, epi-β-bisabolol, 1,8-cineole, density, refractive index, rotary power, Benin.

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INTRODUCTION

The *P. guajava* Linn. is a small tree (5 to8m high), hard wood and tortuous, a native of Central America [1-4], but knows a good development in the tropical regions of Africa[5]. In the nutritional plan, the fruit of *P.guajava*, similar in form to that of aspherical berryis veryedible [6]. It is an excellent source of vitamins essential for growth and proper functioning of the human body (especially vitamins C and A) [7]. To Cambridge and in China, the leaves are used to reducefever, to restore tonic psychiatrist and to relieve the diabetes [8,9]. Its aerial parts and roots, rich in tannins have astringent and anti-diarrheal properties [10]. Moreover,Petardreportedin 1986 that Thahitiens of the French Polynesia considered, 150 years ago, the *P. guajava*as a Polynesian medicinal plant[11]. In traditional medicine in Benin, *P. guajava* helps to treat dysentery, diarrhea and jaundice[5].

Several scientific studies relating to the determination of the chemical composition of *P. Guajava* and it has been reported for various compounds characteristic of the type of essential oil studied. In 1991, Xiao-duo *et al.* have shown the existence, an important proportion, of 1,8-cineole (18.9%)andα-pinene(37.8%)in the essential oilof *P. guajava* leaves acclimated in China [9].These same main compounds (monoterpenoïcs) were identified n the volatile extracts of *P. guajava* leafy-stems of Brazil (1,8-cineole:21.4%, α-pinene: 23.9%) [3]and Taiwan (1,8-cineole: 12.4%, α-pinene: 14.7%) [4]. Sagrero-Nieves in Mexico(1994) [12],Jorge inCuba[1],Ogunwandé in Nigeria(2003) [2], Chen in Taiwan(2007) [4] and Soaresin Brazil(2007) [7] have published somec hemical compositions marked byt he presence of other major constituent such as α-selinene, β-caryophyllene, δ-selinene, (E)-nerolidol, selin-11-en-4-α-ol, limonene,(E)-2-hexenalandcis-hex-3-en-1-ylacetate.

Benin is a tropical country with lush vegetation, rich in aromatic plant species varied. *L.camara*, part of this vegetationis aromatic and essential oil product. It is of the verbenaceae family and it grows inall the tropical and subtropical regions of America, Africa and Asia. This tree carries triangular leaves at the top and regularly toothed on the edges. The leaves have enough virtue srecognized in Benin traditional medicine. Indeed, Adjanohounreportedin 1989 [5] tha t*L. camara* stem-leaves, combined with those of *Caesalpinia pulcherrima*re lieve schizophrenia. He also indicated that the decoction of *L.camara* leaves and roots, associated with the barks of *Mangiferaindica* and *Anacardium occidentale*, then the *Olaxs ubscorpioidea* roots and *Xylopia aethiopica* fruits, isused orally against diabetes[5]. Essential oils extracted from the leaves, seeds and flowers of*L. camara*was the object of several works since a few years [13, 14]. Recently in 2004,Alitonou reported the presencein the leavesharvested to Abomey by importantcompounds such asβ-caryophyllene(18.5%), sabinene(13.1%), α-humulene(10.0%), 1,8-cineole (9.0%)andδ-guaïene(5.0%) [15]. Later in 2005, Randrianalijaonahasemerged majors compoundsof the essential oilofpink-purple flowersof*L.camara*,collectedin Madagascar (sabinene(9.4-11.3%), 1,8-cineole(3.7-4.6%), linalool (4.8-6.1%), β-caryophyllene(11.3-13.6%), α-humulene(0.1-0.4%), β-bisabolene(1.7-2.3%), δ-cadinene(0.1-0.4%), ar-curcumene(1.0-1.6%), caryophyllene oxide(1.2-0.7%) anddavanon(22.6-25.9%) [16]. Ofsuch compoundsin different proportions,were alsonoticed byGC/MS in theessential oils from *L.camara*leavesof Bangladesh[17], Brazil [18], India [19].

This studywas promptedbecause ofthe increased interestof the population inthese plants in the traditional medicine andinpost-harvestsystemsin Benin.Unfortunately, the ecosystems usually harboringthese plantsdisappeargradually under the influence of the strong demographic pressure anddue to the absenceofconservation policy of the virtuousplants. Thiswork objective was toanalyze and studybyGC/MS the chemical compositionsof essential oils fromleaves of *P.guajava*and*L. camara*thenidentifiessimilarities and differences betweenthe values of thephysical properties(density, refractive index and rotatory power) of these volatile extracts.

MATERIALS AND METHODS

EXPERIMENTAL

Plant material and distillation of the volatile constituents

*L. camara*and*P.guajava*leaves werecollectedrespectivelyin 2006in 2007 in severaldifferent locations from the south ofBenin.They were identifiedand certifiedtoin Abomey-CalaviUniversity National Herbariumand storedin the laboratory between18 and 20°Cin the shade ofthe sunlightthroughout the extraction period.The essential oils wereextractedby hydrodistillationof the leaves (250-300 g) for three hours on Clevengeraccording to the method used inbritishpharmacopoeia [20].They were dried overanhydrous sodium sulfateand analyzed byGC/MS.

Physical properties

Density at 20°C

Thedensity measurewascarried out usinga micro-pycnometeranda precision balance.

Refractive index at 20 ° C

The refractive index was determined by means of the refractometer CARL ZEISS JENA 234678.

Rotatory power at 20 ° C

Themeasurement was madebyCARL ZEISSpolarimeter128291.

Analysis of the volatile constituents

GC/MS: The essential oils were analysed on a Hewlett-Packard gas chromatograph Model 7890, coupled to a Hewlett-Packad MS model 5875, equipped with a DB5 MS column (30m X 0.25mm; 0.25µm), programming from 50°C (5 min) to 300°C at 5°C/min, 5 min hold. Helium as carrier gas (1.0 mL/min); injection in split mode (1:30) ; injector and detector temperature, 250 and

280°Crespectively. The MS working in electron impact mode at 70 eV; electron multiplier, 2500V; ion source temperature, 180°C; mass spectra data were acquired in the scan mode in *m/z* range 33-450.

GC/FID: The essential oils were analysed on a Hewlett-Packard gas chromatograph Model 6890, equipped with a DB5 MS column (30m X 0.25mm; 0.25µm), programming from 50°C (5min) to 300°C at 5°C/min, 5min hold. Hydrogen as carrier gas (1.0 mL/min); injection in split mode (1:60); injector and detector temperature, 280 and 300°C respectively. The essential oil is diluted in hexane: 1/30.

The compounds assayed by GC in the different essential oils were identified by comparing their retention indices with those of reference compounds in the literature and confirmed by GC-MS by comparison of their mass spectra with those of reference substances [21, 22, 23].

RESULTS

Thehydrodistillationmadefrom the leaves of*P.guajava*and*L. camara*generatedessential oilsyield values between0.018 and0.82%.

Table 1 : Essential oil yieldofleaves of *P. guajava*and*L. camara*

	P. guajava					*L camara*		
samples	F_1	F_2	F_3	F_4	F_5	F_6	F_7	F_8
yield (%)	0.30±0.01	0.54±0.01	0.41±0.01	0.25±0.02	0.82±0.01	0.02±0.001	0.02±0.002	0.018±0.002

$\mathbf{F_1}$= Adjarra (17-05-07),$\mathbf{F_2}$= Banigbe (27-05-07),$\mathbf{F_3}$= Hounsa (24-04-07),$\mathbf{F_4}$= Misserete (19-08-07), $\mathbf{F_5}$= Tchaada (26-08-07),$\mathbf{F_6}$ = Abomey-Calavi (07-06-06),$\mathbf{F_7}$ = Ouando (07-06-06),$\mathbf{F_8}$= Seme (07-06-06)

In the table 2were grouped the experimental valuesofdensity,refractive indexandrotatory powerof*Psidiumguajava*and*Lantanacamara*leaves essential oils.

Table 2 : physical characteristics of *P.guajavaL.*and*camara*leavesessential oils

samples	**density (20°C)**	**refractive index(20°C)**	**rotatory power(20°C)**
F_1	0.961	1.4930	-12.7
F_2	0.874	1.4945	-7.5
F_3	0.732	1.4900	-12.3
F_4	0.891	1.4901	-15.8
F_5	0.926	1.4920	-10.1
F_6	0.908	1.4735	5.2
F_7	0.881	1.4715	5.3
F_8	0.885	1.4705	5.3

$\mathbf{F_1}$= Adjarra (17-05-07),$\mathbf{F_2}$= Banigbe (27-05-07),$\mathbf{F_3}$= Hounsa (24-04-07), $\mathbf{F_4}$= Misserete (19-08-07),$\mathbf{F_5}$= Tchaada (26-08-07),$\mathbf{F_6}$= Abomey-Calavi (07-06-06), $\mathbf{F_7}$ = Ouando (07-06-06),$\mathbf{F_8}$= Seme (07-06-06)

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The compounds identified bygas chromatographycoupled withmass spectrometryand theirKovatsindicesaresorted byessential oilsamplein the Table 3.

Table 3 : Chemical compositions of theessential oils of*P.guajava*and*L. camara* leaves

Components	RIexp	RIth	(%)							
			P. guajava					*L. camara*		
			F_1	F_2	F_3	F_4	F_5	F_6	F_7	F_8
(3E)-hex-en-1-ol	854	844	-	-	-	-	0.6	-	-	-
tricyclene	929	921	-	-	0.9	1.7	0.3	0.4	0.4	-
α-thujene	932	924	-	-	-	-	-	-	2.9	4.0
α-pinene	935	932	-	-	-	-	-	2.3	-	-
camphene	946	946	-	-	-	-	-	1.2	-	1.6
α-fenchene	947	945	-	-	-	-	-	-	1.4	-
benzaldehyde	959	952	1.7	2.1	1.6	2.5	5.7	-	-	-
sabinene	973	969	-	-	-	-	-	15.9	18.4	21.5
β-pinene	979	974	-	-	-	-	-	1.9	2.3	3.4
6-methyl-5-hept-5-en-2-one	981	-	-	-	-	0.2	1.1	-	-	1.0
myrcene	991	988	0.3	-	-	0.2	-	1.8	1.9	2.1
p-mentha-1(7),8-diene	999	1003	-	-	-	0.3	-	2.5	2.3	2.6
α-terpinene	1015	1014	-	-	-	-	-	0.3	0.2	0.2
p-cymene	1021	1020	-	-	-	0.3	-	-	0.2	0.6
limonene	1028	1024	16.0	3.4	10.9	20.7	4.0	0.2	-	-
1,8-cineole	1029	1026	-	0.5	-	0.1	6.4	1.6	1.7	23.4
(Z)-β-ocimene	1037	1032	-	-	-	-	0.4	11.2	13.8	-
(E)-β-ocimene	1050	1044	-	-	-	-	0.3	1.2	1.4	1.0
γ-terpinene	1057	1054	-	-	-	-	-	0.6	0.5	0.8
cis-sabinene hydrate	1070	1065	-	-	-	-	-	0.9	1.1	0.6
terpinolene	1083	1086	-	0.3	-	-	-	0.4	0.5	0.4
linalool	1097	1095	-	-	-	-	0.3	-	-	
trans- sabinene hydrate	1098	1098	-	0.3	-	-	-	0.9	0.6	0.8
cis-p-menth-2-en-1-ol	1122	1118	-	-	-	-	-	-	-	0.1
camphor	1146	1141	-	-	-	0.7	-	1.4	1.7	2.1
borneol	1171	1165	-	-	-	-	-	0.2	0.7	0.3
terpinen-4-ol	1177	1174	-	-	-	-	0.3	1.9	1.2	2.5
α-terpineol	1192	1186	-	-	-	-	0.9	1.1	1.1	1.1
methyl geranate	1316	1322	-	-	-	0.2	-	-	-	-
eugenol	1348	1356	-	-	-	-	-	1.3	-	-
α-copaene	1374	1374	2.4	2.7	2.3	3.9	1.0	0.4	0.3	0.4
β-elemene	1384	1389	-		-	-	-	0.6	0.5	0.3
sesquithujene	1398	1405	0.3	0.4	0.3	-	-	-	-	-
α-*cis*-bergamotene	1409	1411	0.9	-	1.2	-	0.5	-	-	-
β-caryophyllene	1419	1417	3.0	11.3	3.0	6.3	6.4	19.3	17.7	10.9
β-copaene	1428	1430	-	-	-	-	-	0.4	0.4	0.4
α-*trans*-bergamotene	1429	1432	0.5	0.7	0.5	0.3	0.7	-	-	-
(Z)-β-farnesene	1447	1440	0.4	0.5	0.4	-	0.5	-	-	-
α-humulene	1454	1452	0.6	1.6	0.6	1.2	1.0	6.5	5.9	4.4
β-santalene	1456	1457	0.6	0.5	0.7	-	0.6	-	-	-
sesquisabinene	1459	1459	-	-	-	-	-	0.2	-	-

allo-aromadenderene	1461	1460	-	-	-	-	-	-	0.2	-
α-acoradiene	1462	1464	0.9	1.6	1.8	-	1.1	-	-	-
β-acoradiene	1471	1469	-	2.5	1.3	-	2.5	-	-	0.1
γ-muurolene	1472	1478	-	-	-	0.5	-	-	0.2	0.9
ar-curcumene	1474	1479	3.1	2.6	4.7	-	2.7	-	-	-
γ-curcumene	1478	1481	1.3	2.4	-	-	-	-	-	-
germacrene-D	1480	1484	-	-	-	-	1.2	0.2	1.8	-
β-selinene	1488	1489	0.5	1.7	0.5	3.1	-	-	-	-
α-zingiberene	1489	1493	-	0.6	-	-	-	-	-	-
α-selinene	1491	1498	0.5	0.5	-	2.8	0.7	-	-	3.1
bicyclogermacrene	1493	1500	-	-	-	-	-	1.4	6.8	-
(Z)-α-bisabolene	1494	1506	1.4	3.3	-	-	-	-	-	-
germacrene-A	1498	1508	-	-	1.4	-	-	6.0	0.2	0.1
γ-cadinene	1510	1513	0.9	0.7	1.3	-	-	-	-	0.4
β-curcumene	1512	1514	9.5	11.7	10.0	-	11.8	-	-	-
β-sesquiphellandrene	1520	1521	1.9	3.5	1.9	-	3.2	-	-	0.2
δ-cadinene	1522	1522	-	1.3	-	0.8	0.5	0.6	0.5	-
(E)-γ-bisabolene	1523	1529	1.9	2.6	1.9	-	2.8	-	-	-
α-cadinene	1536	1537	0.4	0.6	0.4	-	0.3	-	-	0.1
δ-cuprenene	1546	1542	-	-	-	-	-	0.9	0.5	0.2
germacrene-B	1555	1559	-	-	-	-	-	1.0	0.6	-
(E)-nerolidol	1556	1561	3.2	3.5	3.6	0.9	3.6	3.5	2.5	1.3
caryophyllene alcohol	1574	1570	-	-	-	0.4	-	0.6	-	-
sesquisabinene (E)-hydrate	1578	1577	-	-	-	-	-	0.6	0.3	0.6
caryophyllene oxide	1580	1582	0.9	1.9	1.1	2.7	1.2	0.8	0.6	-
β-copaen-4-α-ol	1584	1590	-	0.3	-	0.3	-	-	-	-
guaïol	1591	1600	-	0.9	-	0.4	-	-	-	-
epi-globulol	1606	-	0.6	1.7	0.6	0.4	0.5	-	-	-
humuleneepoxyde II	1607		-	0.6	-	1.2	-	0.8	0.6	0.5
1,10-di-epi-cubenol	1619	1618	-	1.5	-	0.3	1.9	-	-	-
1-epi-cubenol	1631	1627	1.9	-	4.6	3.7	-	2.1	-	1.3
α-acorenol	1632	1632	2.6	1.8	-	-	2.0	-	-	-
β-acorenol	1635	1636	1.3	1.3	1.3	2.4	-	-	-	-
epi-α-cadinol	1639	1638	1.2	2.0	1.4	-	2.3	0.4	0.2	-
epoxy-allo-alloaromadendrene	1633	1639	-	-	-	1.6	-	-	1.5	-
epi-α-muurolol	1641	1640	0.4	-	0.5	1.4	-	-	-	-
α-muurolol	1644	1644	-	1.1	1.3	2.3	1.0	-	-	-
cubenol	1653	1645	1.1	0.4	0.8	-	-	-	-	-
α-cadinol	1654	1652	-	1.4	1.3	-	1.0	-	-	-
neo-intermedeol	1658	1658	2.7	2.6	2.5	-	-	-	-	-
selin-11-en-4-α-ol	1660	1659	-	-	-	9.9	2.7	-	-	-
14-hydroxy-9-epi-(E)-caryophyllene	1668	1668	-	-	-	0.9	-	-	-	-
epi-β-bisabolol	1670	1670	-	-	20.2	-	15.8	-	-	-
β-bisabolol	1671	1674	18.9	11.7	-	-	-	-	-	-
nerolidyl acetate	1678	1676	1.1	0.8	1.2	-	1.4	1.3	1.0	-
epi-α-bisabolol	1680	1683	3.7	1.4	4.2	-	3.0	-	-	-
α-bisabolol	1683	1685	2.1	2.4	2.1	0.2	-	-	-	-
(2Z, 6Z)-farnesol	1709	1698	1.3	-	1.5	4.3	0.8	-	-	-
(2Z, 6E)-farnesol	1710	1714	0.7	0.5	0.6	10.0	-	-	-	-

(2E, 6E)-farnesol	1742		0.9	-	0.8	6.0	0.3	-	-	-
benzyl benzoate	1764	1759	-	0.4		0.5	-	-	-	-

F_1= Adjarra (17-05-07), **F_2** = Banigbe (27-05-07), **F_3** = Hounsa (24-04-07), **F_4**= Misserete (19-08-07),
F_5 = Tchaada (26-08-07), **F_6** = Abomey-Calavi (07-06-06), **F_7**= Ouando (07-06-06), **F_8**= Seme (07-06-06),
RI = Retention index, **exp** = experimental, **th** = theoric

DISCUSSION

The values of the yields of*P. guajava*essential oilrecordeddiffer between them and are situated between0.25% and0.82%.The lowest yieldof*P. guajava*leaves essential oils studied was0.25%.It wasapproximately 2.5 timeslarger than that(0.1%) of *P. guajava*leavesharvestedin French Polynesia[10]. The essential oilsampleF_5presented aproportionof essential oil(0.82%)remote from that(0.75%)leavesstudiedin Nigeria [2]. Forcons, the essential oil yields (0.41%) of the sample F_3 close to that(0.4%)of*P. guajava*volatileextractstudied in Brazil[3]. As for the *L.camara*leaves, the yields in essential oils of samplesF_6, F_7, F_8were lower than thosegenerated by thesamples of *P.guajava*essential oils. They were estimated,on averageat 0.2%.According to theresults of other studiesreported in the literatureon the genre *Lantana*, the essential oilsyieldsof the aerial partswere between 0.01and 0.4% [24, 25, 26].

In Table the 2were recordedtheresults of the determinationof the physical properties(density,refractive index,rotatory power) of *P. guajava*and*L.camara*volatileextracts.Differences wereobserved in relationto variousharvest siteson the one handand on the otherhand,the botanical speciesconsidered.The sampleof essential oil of*P. guajava*F_1 appearsas the mostdense(0.961). Thevalues of the rotatory powerrecordedweredifferent from a botanical specieseach other.Consequently, theessential oilsamplesfrom the samebotanical species(*P. guajava*or*L. camara*)exertthe same actiontowards the polarized light.Concerningthe refractive index, the values recordedwere practicallyhomogeneousby botanical species. The table3 reports thecompounds, with character fowl,identified in *P.guajava*and*L.camara*essential oils. At the level ofthe fivesamplesof *P.guajava*essential oil,40 to 51compounds werehighlighted representing 93.6% to 97.2% of the weight of the volatileextractstudied.In this table,it appears that theessential oils from *P.guajava*leavescontainsignificant rates ofhydrogenatedand oxygenatedsesquiterpenes(62.1-89.1%). Thesesquiterpenic hydrocarbons(18.6-52.6%) were more represented thanhydrogenatedmonoterpenesproportionsmorelower(3.4-23.3%). As for theoxygenated monoterpenes,their proportions in theessential oils studiedwere evaluatedbetween 0.5% and7.6%.The main products which form these samplesof the essential oilwerelimonene(3.4-20.7%), β-bisabolol(14.9-20.2%), epi-β-bisabolol(11.7-18.9%), β-caryophyllene(6.1-10.9%), β-bisabolene(7.5-10%), (2E,6E)-farnesol(10.0%)andselin-11-en-4-α-ol(9.9%). It wasalso noted, with significant proportions, the presence of neryl(Z)-3-hexanoate (5.8%)inF_4andα-cuprenene(7.2%)inF_5. The limoneneandβ-caryophyllenepercentages of essential oilssampleschromatographed weretaken away well from those (respectively 42.1% and21.3%) stemming fromOgunwande*et al*.(2003)work in Nigeria [2].The samplesF_1 andF_3were devoidof 1,8-cineole, linalool andα-terpineol.Except1,8-cineole(6.4%) foundin F_5, linalool and α-terpineoloccurred atless than 1%in the samplesF_2, F_4, F_5. The F_5proportion in 1,8-cineolewasmuch lower than that(18.9%)noted in thevolatileextractof *P.*

*guajava*leaveschromatographedin China [9] and morelowercompared to the resultspublished in BrasiliabydaSilva*et al*.(2003) [3]. On the over hand, the results of the workspublished by variousauthors coming fromCubain 2001,Nigeria in 2003, Taiwan in 2007and Brasiliain 2007did not mentionthe presence of1,8-cineolein the group ofodoriferous compounds of the essential oilsof the leavesof*P.guajava* [1, 2, 4, 7]. Severalestershave markedtheir presence in the essential oilsof botharomatic speciesinvolved in this study. Theneryl (Z)-3-hexanoate and isobornyl5-hydroxy isobutyrateappeared withsubstantial proportions, respectively5.8%and 2.5%.Otheresters(acetate (Z)-nerolidyl,(2E,6E)-farnesyl acetate, benzyl benzoate,neryl benzoate, methylbutyl 2-methylbutanoate, isopentenylisovalerate, 3Z-hexenyl butanoate, methylgeranate,2-methylbutyl benzoate,nerylcrotonate, geranyl 2-methylbutanoate) were indicated in traces(< 0.5%). It wasimportant to note thatthe chemical compositionspresented in this workhighlightedthemajor compoundsdifferent from thoseidentified in Brasilia (α-pinene: 23.9%;1,8-cineole:21.4%;β-bisabol: 9.2%) [3]and Mexico(α-selinene: 23.7%; β-caryophyllene: 18.8%and δ-selinene: 18.3%) [12].According to the results in the Table 3,*L. camara*essential oils were marked by the presence of important proportions of hydrogenated and oxygenated monoterpenes (48.3-68.7%). The proportions of hydrogenated and oxygenated sesquiterpenes varied between 23.9 and 46.3%. The major compounds recorded independently of the origin of each of the samples of essential oils were 1,8-cineole (23.4%), sabinene (15.9-21.5%), (Z)-β-ocimene (11.2-13.8%), β-caryophyllene (10.9-19.3%), α-humulene (5.9-6.5%), bicyclogermacrene (6.8%), germacrene-A (5.8%), *cis*-prenyl limonene (4.3%) and α-thujene (4.0%).Unlike chemical profile samples F_6 and F_7 which were marked by traces, the rate in 1,8-cineole (23.4%) of fraction F_8 was very high. Let us said that the proportions of (Z)-β-ocimene (11.2% and 13.8%) were noticed only for F_6 and F_7. Except δ-guaïene (5.0%), the majors compounds of F_6 volatile extract were qualitatively identical to those identified by Alitonou*et al.* in 2004 [15] in the *L. camara*leaves from Abomey-calavi. The work realized by Adeleke*et al*. on the essential oil extracted from the flowers and leaves of *L. camara* collected in Nigeria in 2004 brought back the sabinene (19.6-21.5%), 1,8-cineole (12.6-14.8%), β-caryophyllene (12.7-13.4%), α-humulene (5.8-6.3%) as major odoriferous constituents also identified in fractions F_6, F_7, F_8 [27].In contrast,the essential oilsobtained from the *L.camara*leavescollectedin Cuba andChina, the main compounds highlightedwere respectively the(E)-nerolidol(43.4%) [28]andgermacrene-D [29]. Forcons, the chemical compositions ofessential oils studieddifferfrom that of thevolatileextractof the flowersofMadagascarmarked by the presenceofdavanon(22.6-25.9%) [16].

CONCLUSION

The results obtainedat the end ofthis workdeal withthe chemical compositions ofessential oils from *P.guajava*leavesand those of*L. camara*collected inseveral localitiesin the south of Beninand theirphysicochemical characteristics. The chemical profilesobserved did notremained constantbetween two samplesof the same botanical varietyandby an essential oilto another. The *P. guajava*essential oilsareespecially rich invariedsesquiterpenoïcs compounds whereas those of*L. camara*are markedat the same time by the presence ofhydrogenated and oxygenatedmonoterpenes. The rotatory powers values calculatedshow that theessential oilsamplesbelonging to the samebotanical speciesmay have the samebehaviortowards the polarized light.These values are on averageidentical forsamplesof *L.camara*essential oil analyzed.As for therefractive index,the results seem to show homogeneitywithinthe same botanical species. At the level of the density, the values are not homogeneous. They could be incorrelation withthe origin of eachessential oil.Subsequent workextended to othersites of harvested of *P. guajava*and*L. camara*leaves will allow to verify this hypothesis.

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