Woody notes in perfumery

Patchouly Oil, Absolute and Aroma Chemicals: Part I

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Patchouli is a valuable perfume material used in traditional and contemporary women's and men's fragrances, as well as in cosmetic and soap perfumes. The word "patchouli" (also "patchouly") in Tamil is *paccilai*: *paccu* (green) + *ilai* (leaf).*[1] Patchouli is known in India as *putchaput* and in Hindustan as *pacholi*.

In an early classification of odors done by Rimmel, the odor of patchouli was classified in the camphor group.[2] In the 1950s, Cerbelaud described the odor of patchouli as "heavy, vibrant with musty, herbaceous and camphoraceous notes, warm and lasting."[3]

Today, the odor description and classification have changed. Now, various types of processed patchouli oils are available, and patchouli is listed by suppliers among woody materials. Both researchers and perfumers concur, considering patchouli to be in the woody family of odors.

Botanical Origin

Patchouli (family Labiatae) is a bushy plant about 3 feet high, native to the Philippines and Indonesia. It is cultivated in India, China and South America. There are several species of patchouli plants, but only *Pogostemon cablin* Benth. is used to obtain patchouli oil.

Mode of Production, Yield and Type of Oil

Patchouli oil is extracted from the leaves of the *P. cablin* Benth. plant. Dried leaves are steam distilled. The yield is about 3%. Molecular distillation is used to obtain an iron-free, lighter-color patchouli oil. Patchouli absolute is obtained by solvent extraction of patchouli leaves.

The following patchouli oils are available commercially:

- Patchouli Indonesia
- Patchouli China

Some of the processed patchouli oils offered by various suppliers include:

- Patchouli molecular distillation
- Patchouli rectified
- Patchouli tartarized (light)
- Patchouli "Keva" India (contains no solvent residues, inorganic salts or heavy metals)
- Patchouli absolute Indonesia (earthy, woody and herbaceous, with a camphoraceous note that is not pronounced)
- Patchouli absolute molecular distillation (especially suitable for alcoholic fragrances)

Patchouli Oil Composition

Although patchouli alcohol was isolated by Gal in 1869, relatively little was known of the patchouli oil composition in the early part of the 20th century.

In 1952, Guenther mentioned the following patchouli components:[4]

- azulene (1863)
- benzaldehyde (traces) (1904)

*Other sources cite the word "patchouli" as being derived from two Tamil words: *patchai* (green) and *ellai* (leaf), which is similar to the above. The variation may be explained by simple phonetics.

- cinnamic aldehyde
- eugenol benzoate
- patchouli alcohol (structural formula not clarified)
- a sesquiterpene alcohol

In 1951, Cerbelaud listed a few additional components: cadinene, cinnamic alcohol and eugenol.[5] In the 1960s, Büchi et al. isolated and identified two nitrogen-containing sesquiterpenes, which they named patchoulipyridine and epiguaiapyridine.[6]

In 1966, Mookherjee et al. isolated norpatchoulenol and nortetrapatchoulol, which they considered as "the principal odor-containing components of patchouli oil."[7] In connection with this work, three different patchouli oils were fractionated. The odor evaluation showed that only the neutral fraction of each oil had "a warm, herbaceous, camphoraceous, woody" patchouli odor. An in-depth analysis of each oil was performed, characterizing 209 components, of which 180 were new to patchouli; some were novel compounds. Among them were: β-patchoulenone, possessing a strong woody patchouli odor (patented by IFF); α-guaienone, possessing a strong carvone, camphoraceous odor; and α-cedrenal, possessing a strong woody odor. According to the researchers, the compounds, in concert with patchouli alcohol (whose structural determination was done by Büchi), "play a definite role in producing the characteristic odor of patchouli oil."

In the 1970s, Maurer identified methoxy pyrazine and 2-amino-acetophenone, which were considered likely contributors to the odor of patchouli oil.[8] In the same period, sesquiterpenes, pogostol, bulnesol, norpatchoulenol, α-guaiene, α-bulnesene and β-patchoulene were identified by various researchers. Other components found included cycloseychellene (a tetracyclic sesquiterpene), pogostone (a lactone), humulene (a sesquiterpene hydrocarbon), 1α-5α-epoxy-α-guaiene and epoxycaryophyllene (oxygenated sesquiterpenes). Patchouli oil was found to be composed mainly of patchouli alcohol (ca. 40%).[9]

In 1976, Taveira Magalhaes et al. reported a quantitative analysis of patchouli from plantings introduced into Brazil:[10]

β-patchoulene	1.9–2.2%
α-guaiene and caryophyllene	11.3–22.2%
α-patchoulene and aromadendrene	10.8–20.9%
α-bulnesene	13.0–20.3%
patchouli alcohol	23.6–45.9%

In the 1980s, Mookherjee et al. reported the major odorous compounds of patchouli oil.[11] They were:

patchouli alcohol	30%
α-bulnesene	25%
β-caryophyllene	20%
α-guaiene	15%
α-bulnesene oxide	4%
caryophyllene oxide	2%
β-elemene	1%
α-guaiene oxide	1%
pogostol	1%
norpatchoulenol	0.5%

In 1991, Ishihara et al. noted that patchouli oil contained the following sesquiterpene hydrocarbons:[12]

α-copaene	3%
β-patchoulene	4%
α-gurjunene	4%
β-caryophyllene	7%
α-guaiene	21%
γ-patchoulene	1%
α-humulene	1%
α-patchoulene	12%
seychellene	11%
α-bulnesene	24%
δ-cadinene	1%

In 1992, Maurer and Hauser reported the presence of 3-(1-butenyl) pyridines in patchouli oil.[13] In 1997, Rakotonirainy et al. determined that the main sesquiterpene hydrocarbons of patchouli oil were:[14]

α-guaiene	21.5%
seychellene	9.6%
α-patchoulene	9.1%
α-bulnesene	34.6%

In 2000, Buré et al. characterized the presence of the following four sesquiterpenes in patchouli oil: aromadendrene, allo-aromadendrene, dehydroaromadendrane and ledene.[15]

As can be seen in the previous analyses by various researchers, the percentages of identical patchouli oil components differ. This is illustrated in T-1.

Comparative percentage range of a few selected patchouli oil components **T-1**

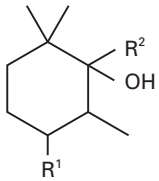
Compound	Percentage
patchouli alcohol	23.6–45.9%
α-bulnesene	13.0–34.6%
α-guaiene	15.0–21.5%
seychellene	9.6–11.0%
α-patchoulene	9.1–12.0%
β-patchoulene	1.9–4.0%

Mookherjee et al. noted that although norpatchoulenol has a stronger odor than patchouli alcohol, it loses about 50% of its strength within 24 h, while the odor of patchouli alcohol remains fairly constant during the same period of time.[11] Nortetrapatchoulol was found to retain its odor strength much longer.

Another researcher's findings are, interestingly, diametrically opposite in regard to patchouli alcohol. According to Teissiere, patchouli alcohol in a high state of chemical purity is practically odorless, and the main carrier of the patchouli odor is norpatchoulenol, whose concentration in patchouli oil is 0.3–0.4%.[16]

In their study of monocyclic derivatives starting from 2,6,6-trimethylcyclohex-2-en-1-one3, Weyerstahl et al. found that the materials most reminiscent of patchouli alcohol were the type A alcohols 18–21:[17]

However, although the four compounds possessed patchouli odor elements, they were not well-balanced, with a dominating camphor odor.



18–21
Type A

Spreitzer et al. studied the structure-activity relationship of the bridgehead-bonded methyl group of patchouli alcohol and norpatchoulenol, as well as the olfactory properties of the unsaturated resp. saturated derivatives.[18] The organoleptic analyses of the tricyclic alcohols and the differences from the naturally occurring patchouli alcohol and norpatchoulenol were discussed. The researchers believed that "the two sesquiterpene alcohols—patchouli alcohol and norpatchoulenol—are the principal cause of the patchouli odor."

In spite of the progress in the knowledge of patchouli oil composition and the discovery of new components that contribute most to its odor, the complex and lasting odor of patchouli is difficult to imitate. It appears that patchouli alcohol, besides being the main component of patchouli oil, is of importance to the lastingness of its odor. The following formula shows an early attempt to reproduce patchouli:

Patchouli resinoid

425	balsam copaiba
300	cedarwood
300	*Resina alba*
300	rosin
350	patchouli oil
100	phellandrene
100	vetiver
100	balsam Peru
100	oleoresin ginger
20	octyl formate
5	cade oil
5	isoborneol
2,105	

Today's endeavor is to develop patchouli substitutes/extenders:

Accord 8FC1081 (BASF)

250	patchouli oil Indonesian
80	gurjun balsam oil rectified
70	Isolongifolanone (Quest)
60	Koavone (IFF)
60	copaiba balsam oil rectified
25	guaiacwood oil
20	cedarwood oil Texas rectified
15	Rootanol 100 (BASF)
10	caryophyllene
10	Patchone (IFF)
400	Cyclopatchol 50 (BASF)
1,000	

Aroma Chemicals of Woody, Patchouli and Multifaceted Odors

Andrane: 8,9-epoxy cedrane (IFF), woody, patchouli, ambergris.

Dimethyl cyclormol: 4,7-methano-1H-inden-5-ol, 3a,4,5,6,7,7a-hexahydro-2(or 3),4-dimethyl (IFF), diffusive, camphoraceous, earthy patchouli note.

Piconia: 2H-2,4A-methanonaphthalen-8(5H)-one, hexahydro-1,1,5,5-tetramethyl (IFF), diffusive, woody, earthy, camphoraceous patchouli note, long lasting.

Isolongifolanone: 2,2,7,7-tetramethyltricyclo[6.2.1.0~1,6]un-decan-5-one (Quest), possesses a woody, diffusive note with amber and earthy, camphoraceous odor tonalities.

Mahagonat: bicyclo 2.2.2-5-octene-2-carboxylic acid, 1(or 4)-methyl-4(or 1)-(1-methylethyl)-methyl ester $C_{14}H_{22}O_2$ (Symrise), woody-spicy, patchouli, vetiver and sandalwoodlike with a note of iris.

Isobornyl methyl ether: exo 2-methoxy-1,7,7-trimethyl bicyclo 2.2.1 heptane (Takasago), camphoraceous, woody, earthy.

Palisandin: cyclododecyl methyl ether $C_{13}H_{26}O$ (Symrise), woody, cedarwoodlike, earthy with patchouli, orris and tobacco accents.

A new derivative of Isolongifolene: developed by Haarman & Reimer (now Symrise) to be used as an extender of patchouli.[19]

Palisandal: 1,1-dimethoxycyclododecane $C_{14}H_{28}O_2$ (Symrise), woody cedar with a patchouli note and ambergris nuances.

The so-called patchouli epoxide: present in patchouli oil, it has a powdery note, woody, strong and long lasting.[20]

Huminol M: 8-methyl-1,5-dimethylbicyclo-(3,2,1)-octanol, strong, humid, earthy odor, recalling norpatchoulenol.[21]

Patchomint: 3,3-dimethyl-2-norbornane-2-ethanol, camphoraceous, minty, corniferous, with patchouli nuances.[22]

Cyclopatchol 50 (BASF): herbaceous with a warm woody-earthy and slightly ambery note, reminiscent of patchouli oil.

Terrasol 50 (Bedoukian): earthy, fresh soil odor, enhances woody, mossy, earthy notes.

Methyl Undecyl Ketone (Bedoukian): fatty, herbaceous, earthy.

1-Octen-3-ol: Amyl Vinyl Carbinol (Bedoukian), herbaceous, earthy, haylike.

Isophorone: $C_9H_{14}O$ (Aldrich), cedarwood, tobacco, leathery.

Orivone: paratertiary amyl cyclohexanone $C_{11}H_{20}O$ (IFF), woody, orris, camphoraceous.

9-Ethylidene-3-oxatricyclo (6,2,1,0^{22}) undecan: powerful, woody, rooty-earthy, floral, fruity and rhubarb notes.[23]

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In the previous article, "Wood Notes in Perfumery: Vetiver, Derivatives and Aroma Chemicals. Part II" (September 2005), the following errors occurred:

- **page 47:** In the Peau d'Espagne formula, the amount of jasmin absolute is incorrect (14). It should be "15."
- **page 49:** In Vetiver Fragrance, 10 labdanum resinoid does not belong. It should not have been included in the formula.
- **page 50:** The sentence "The dried root is used to scent clothes lines" should have read "to scent clothes and *linen.*"

Woody Notes in Perfumery: Patchouli in Fragrances, Part II

The evolution and contemporizing of this popular natural material

By Danute Pajaujis Anonis

In Part I (*Perfumer & Flavorist* magazine, v 31 no. 11, 2006; page 36), the botanical origin of patchouli, the mode of production, patchouli oil types, patchouli composition and pertaining aroma chemicals were discussed.* This article will cover the application of patchouli to fragrances. Patchouli has points in common with camphor, cedarwood, vetiver, calamus, oakmoss and orris.

Among modifiers of patchouli odor are:

Complementary

Cedrol
Cedrenyl acetate
Longifolene
Methyl chavicol
Sandalwood

For Lift and Freshness

Amyl salicylate
Bergamot
Cadinene
Dimethyl hydroquinone
Ginger
Isobutyl salicylate
Linalyl acetate
Menthol

For the Floral Note

Diphenyl oxide
Geraniol
Geranium
Linalol
Phenyl ethyl alcohol

For Nuances

Aldehyde C-10
Aldehyde C-11
Aldehyde C-12 (MNA)
Cinnamic aldehyde
Cuminic aldehyde
Oil cumin
Guaiyl acetate
Ionone
Methylionone

Fixatives

Amber
Civet
Myrrh resinoid
Opoponax resinoid
Synthetic musks

Patchouli in Traditional Fragrances

Ambre[1]

100	Labdanum absolute
10	Vetiverol
30	Patchouli oil
110	Bergamot
5	Rose absolute
40	Musk ketone
25	Ethyl vanillin
90	Heliotropin
70	Coumarin
30	Castoreum infusion 3%
20	Rhodinol
10	Phenyl ethyl alcohol
10	Geranium Bourbon
25	Cypress oil
20	Jasmine absolute
5	α-Amyl cinnamic aldehyde
70	Civet infusion 3%
100	Benzoin resinoid
30	Ylang-ylang oil
80	Isobutyl benzoate
120	Mandarin oil
1,000	

*Suggested additional literature:

1. P Kraft, C Weymuth and C Nussbaumer, Total Synthesis and Olfactory Evaluation of (1R*, 3S*, 6S*, 7S*, 8S*)-3-Hydroxy-6,8-dimethyl-tricyclo [5.3.1.0^{3,8}] undecan-2-one: A New Synthetic Route to the Patchoulol Skeleton. *Eur J Org Chem*, 1403–1412 (2006)

2. P Kraft, W Eichenberger and D Frech, From Vetiver to Patchouli: Discovery of a New High-impact Spirocyclic Patchouli Odorant. *Eur J Org Chem*, 3233–3245 (2005)

Extract No. 241[2]

Chypre perfume (Chanel No. 22 type)

50	Mousse de Chêne absolute
350	Bergamot
45	Rose Otto Bulgarian
55	Rose synthetic
70	Orange oil c.p.
65	Sandalwood E.I.
30	Patchouli Penang
25	Methylionone
25	Orris concrete
25	Labdanum Ciste resinoid
70	Musk ambrette
40	Amber synthetic
40	Styrax resinoid
35	Vanilla resinoid
45	Tonka resinoid
20	Opoponax resinoid
5	Safrole 5%
5	Myristic aldehyde 5%
1,000	

60	Musk infusion No. 1
50	Amber infusion No. 4
30	Civet infusion No. 3
8,860	Alcohol 95%
10,000	

Chypre Base No. 239 (Coty type)[3]

220	Sandalwood E.I.
227	Bergamot
50	Rose natural
20	Hydroxycitronellal
5	Coriander
50	Jasmine synthetic No. 51
40	Patchouli
7	Thyme oil
110	Vetiver Bourbon
55	Labdanum Ciste resinoid
110	Mousse de Chêne
70	Castoreum resinoid
20	Neroli synthetic No. 75
1	Isosafrol
15	Musk ambrette
1,000	

Fleurs d'Amour (Roger & Gallet type)

100	Rose synthetic
80	Bergamot
60	Patchouli
40	Ylang ylang
25	Musk xylol
20	Linalol
20	Lavender
20	Geranium
20	Vanillin
20	Clove
95	Solvent
500	

Cuir de Russie[4]

150	Castoreum extract 5%
60	Birch oil
20	Rose Otto
100	Styrax resinoid

100	Bergamot
10	Sandalwood E.I.
5	Patchouli
50	Jasmine absolute
50	Musk ambrette
80	Musk ketone
20	Exaltolide 10%
100	Vetiveryl acetate
30	Tonka resinoid
20	Vanilla resinoid
50	Vanillin
100	Labdanum resinoid
5	Clary sage
10	Oakmoss absolute decolorized
7	Tuberose absolute
3	Acetophenone
10	Cassie absolute
20	Lemon oil
1,000	

Fougère

100	Lavender
140	Geranium
100	Vetiver
50	Amyl salicylate
50	Coumarin
40	Cananga
10	Patchouli
490	

Foin-Coupé (New-mown Hay)[5]

160	Bergamot
185	Coumarin
50	Jasmine absolute
45	Rose absolute
110	Cassie absolute
15	Patchouli
15	Anisic aldehyde
2	Orris concrete
30	Styrax resinoid
10	Neroli Bigarade
28	Fleur d'Oranger absolute
25	Orange sweet c.p.
30	Olibanum resinoid
185	Guaiacwood concrete
110	Geranium oil African
1,000	

Extract No. 289[6]

80	Patchouli
120	Fougère No. 220
200	Rose synthetic No. 163
60	Sandalwood E.I.
160	Jasmine synthetic No. 55
160	Origan No. 292
80	Bergamot
20	Neroli Bigarade
80	Amyl salicylate
20	Amber synthetic
20	Civet synthetic
1,000	

150	Musk infusion No. 1
850	Alcohol 94/96%
10,000	

The *Extract No. 289* formula is an example of an old-fashioned patchouli perfume type that was popular in Europe many years ago. However, it long remained a popular export item to South America.

Before World War II, Germans innovated perfumes without alcohol. The perfume oils were dissolved in diethyl phthalate, castor oil or other solvents. Among such perfumes was patchouli, as illustrated by the following formula:

Patchouli[7]

Patchouli	840 cm^3
Rose synthetic	25 cm^3
Sandalwood E.I.	40 cm^3
Linalol	20 cm^3
Terpineol	60 cm^3
Musk ketone	5 g
Musk xylol	5 g
Aldehyde C-8	5 g

Here is another example of a patchouli compound from the 1950s.

Patchouli compound[8]

90	Patchouli
170	Sandalwood
120	Cedarwood terpeneless
120	Cinnamic alcohol
100	Red rose synthetic
60	Geranium terpeneless
40	Rhodinol
60	Phenyl ethyl alcohol
40	Benzyl salicylate
60	Vanillin
20	Coumarin
120	Heliotropin

In a 1955 patent that covers the preparation of diisopropylbenzyl carbinol, a compound similar to mushroom/moss odor, comprising patchouli oil, is illustrated:[9]

20	Diisopropylbenzyl carbinol
2	α-Amylcinnamic aldehyde
2	Amyl salicylate
10	East Indian sandalwood oil
16	Patchouli oil
2	Isobutylquinoline

Patchouli in Traditional Soap Perfumes

Ambre No. 12

320	Geraniol
120	Linalol
80	Ionone
60	Petitgrain
60	Bergamot

40	Coumarin
40	Musk xylol
40	Benzoin resinoid
20	Sandalwood
20	Patchouli
800	

Emeraude Type No. 602[10]

100	Linalyl acetate
30	Linalyl formate
80	Linalol
200	Lavender
60	Toncarine L.G.
50	Tonka resinoid
100	Methylionone
100	Jasmine synthetic No. 51
50	Patchouli
40	Vetiver Bourbon
50	Heliotropin
50	Geranium Bourbon
30	Oakmoss resinoid
30	Labdanum absolute
30	Moskene L.G.
1,000	

Indian Flower No. 31

250	Cedarwood
120	Bergamot
100	Patchouli
90	Geraniol
35	Cassia oil
25	Methyl cinnamate
20	Benzoin resinoid
5	Vetiver
645	

Fougère No. 23

100	Cedarwood
60	Terpinyl acetate
40	Lavender
40	Oakmoss resinoid
40	Benzyl acetate
40	Elemi resinoid
40	Coumarin
40	α-Amyl cinnamic aldehyde
20	Petitgrain
20	Patchouli
20	Bornyl acetate
20	Amyl salicylate
20	Musk xylol
500	

Rose No. 6

240	Geranium
145	Geraniol
75	Linalol
40	Palmarosa
40	Caryophyllene
20	Miel synthetic (honey)
20	Terpinyl acetate
10	Patchouli
10	Musk xylol
600	

Reuter Type No. 2

220	Geranium Bourbon
170	Terpineol extra
95	Phenyl ethyl alcohol
86	Diphenyl oxide
65	Cedarwood
46	Benzyl benzoate
40	Patchouli
35	Benzyl acetate
35	Musk xylol
30	Rosemary
20	Benzophenone
16	Sandalwood E.I.
14	Resina alba
8	Citronella Java
880	

Recent and older fragrances containing patchouli **T-1**

Women's fragrances

Givenchy III (Huber Givenchy)
Jardanèl Cologne (Jean Deprez)
Courrèges (André Courrèges)
Anais Anais (Cacharel)
Opium (Yves Saint Laurent)
Niki de Saint Phalle
Coriandre (Jean Couturier)
Trésor (Lancôme)
Indécence (Givenchy)
Red (Giorgio)
Attraction (Lancôme)
Pure Turquoise (Ralph Lauren)
Coco Mademoiselle (Chanel)
Flowerbomb (Viktor & Rolf)
Juicy Couture

Men's fragrances

Coriolan (Guerlain)
Oleg Casini (aftershave lotion)
Michael for Men (Michael Kors)
Patchouli Patch (L'Artisan Parfumeur)
Patchouli (Santa Maria Novella)
Lacoste Essential
Most oriental types newer and older

Patchouli was also used in fragrances for perfumed cards, as illustrated by the following formula.

Ambre for perfumed cards

185	Opoponax tincture
185	Styrax resinoid
185	Patchouli
185	Civet tincture
185	Labdanum
14	Rose synthetic
1	Rosin
940	

The illustrated traditional fragrance formulas containing patchouli were developed before the advent of dermatological requirements. Today, some components would have to be adjusted or eliminated in accordance with the International Fragrance Association's requirements.

Among such components are:

1. Bergamot oil: restricted to 0.4% in consumer products
2. Cassia oil: restricted to 1% in a fragrance compound
3. Cinnamic alcohol: restricted to 0.4% in consumer products
4. Hydroxycitronellal: limited to 5% in fragrance compounds
5. Musk ambrette: prohibited
6. Oakmoss absolute: restricted to 0.6% in consumer products
7. Opoponax resinoid: restricted to those extracted with suitable solvents or steam distillates
8. Safrole: should not exceed 0.05% in fragrance compounds
9. Styrax resinoid: only produced by steam or vacuum distillation

Patchouli does not cause any dermatological problems, and it is compatible with other fragrance components. Patchouli also does not figure as an allergen in the rigorous dermatological requirements of the European Union. **T-1** lists both recent and older fragrances containing patchouli.

Application

Patchouli is an important perfume material. In the East, the oil is used to scent linen, and the leaves are used in sachets and potpourris. Patchouli first became known in Europe in the beginning of the 19th century as a scent of cashmere shawls imported from India. Later, patchouli became a popular fragrance per se. The material is a component of such traditional fragrances as *Ambre*, *Chypre*, *Cuir de Russie*, *Fougère*, *Foin Coupé*, *Shalimar*, *Tabu* and *Tobacco*, to name a few.

The 1970s witnessed a return to the mysterious Oriental perfumes containing patchouli, sandalwood and musk, to which patchouli contributed an exceptional lasting quality. Today, the availability of various processed patchouli types has extended the use of patchouli in diverse fragrances in combination with novel notes. For example:

1. *Coco Mademoiselle* (Chanel) illustrates the use of patchouli fractions.
2. *Borneo 1834* (Salons du Palais Royal) is based on decolorized patchouli and includes a bittersweet chocolatelike note.
3. *Attraction* (Lancôme) consists of two opposing notes—iris and patchouli.
4. *Flowerbomb* (Viktor & Rolf) includes jasmine, orchid, freesia, orange and patchouli.
5. *Juicy Couture* includes passion fruit, watermelon, tuberose and patchouli.
6. *Lacoste Essential* is comprised of tangerine, black pepper and patchouli.

Patchouli is also being reinvented in contemporary fragrances. Two versions of the old classic are:

- *Patchouli Patch* (L'Artisan Parfumeur): a musty aroma of the 1960s and 1970s
- *Patchouli* (Santa Maria Novella)

Another example is:

- *Michael for Men* (Michael Kors): patchouli reinvented with undertones of spice and smoke

Patchouli finds application in cream, lipstick, powder, shampoo, shaving cream, hair oil and soap perfumes. Patchouli is a long-lasting fixative for herbal and sultry notes, and it harmonizes well with sandalwood and vetiver. The material is also used in moisturizing bath preparations, and is supposed to have a calming effect. However, the area of greatest promise is a rejuvenation treatment with patchouli and bergamot oils in steam. In addition, it finds use in bathroom cleaners. A novel scent is the combination of green tea and patchouli. This ingredient possesses antibacterial, antifungal and antimicrobial properties.

Conclusion

The current market figures show that patchouli is ahead of several top naturals, with an estimated market value of ~$30 million.[11] In spite of extensive research work done on the material in both oil and alcohol variations, there are no patchouli imitations available as yet. Presently, the modernization of traditional fragrances, including chypre, and the growing trend towards gender-neutral fragrances provide new possibilities for the use of patchouli.

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