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Blending fragrance of tuberose scent from Vietnam natural materials

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Abstract

Tuberose is a special flower, blooms at night, has the ability to emit fragrance at night with a sweet scent. The aim of this research is to create completely natural Tuberose scent scents from natural Vietnam compounds to replace chemical synthesis for fragrance. All the materials for making the Tuberose fragrance were taken from the project on Vietnam essential oils and related natural products. Fragrance assessment by olfactory. The Tuberose fragrance was tested in shampoo 0.5% and perfume 5% by weight. The main aroma Tuberose odor is made up of Floral notes, Woody

notes, Animalic notes. Linalool is the main ingredient, the backbone of the scent of Tuberose. It is used a percentage of 110% in the scent of Tuberose for cosmetics and 150% in perfume, creating a seductive and attractive natural fragrance. We have created the scent of Tuberose FTC for cosmetics, FTP for perfume from ingredients derived from the natural origin of Vietnam. FTC and FTP fragrance are a harmonious combination of Floral, Woody, Animalic, Spicy, Green, Sweet, and Fruity notes.

Keywords: Fragrance, Linalool, Tuberose flower, Sandalwood, Vetiver

Introduction

The scientific name of Tuberose is *Polianthes tuberosa* L., which belongs to the family Agavaceae (Fig.1). Tuberose is a special flower, blooms at night, has the ability to emit fragrance at night with a sweet scent. Tuberose is a light-loving plant that flowers all year round. Tuberose blooms mainly in summer and few in winter. Tuberose has a rather special wing structure, when the air has high humidity, the hole on the petals automatically opens to let the essential oil escape. Although there is no sun at night, the humidity of the air is higher than during the day, so the fragrance is released. Therefore, during the day, Tuberose only gives off a faint scent, but at night it is fragrant. Because Tuberose emits fragrance according to humidity, so not only at night but also during the day, when the air humidity is high, the Tuberose is also more fragrant than on a sunny day^[1]. Its scent is very sweet and is used in perfumery and cosmetic. The more mature flower, the higher the concentration of volatile compounds. The ester compounds are more abundant when flowers bloom at night and the flowers are in full bloom at 3 am^[2].

The chemical composition of Tuberose was analyzed by gas chromatography-mass spectrometry (GC-MS) The results showed that the main chemical components are menthyl anthranilate, benzyl alcohol, butyric acid, eugenol, nerol, farnesol and geraniol, eucalyptol, methyl benzoate (30.17%), benzyl benzoate (23.64%), 7-decen-5-olide (13.33%) and methyl salicylate (12.11%)^[3, 4].

Essential oil, concrete, and absolute Tuberose is extracted by solvent extraction from the fresh flowers, picked before the petals open^[5]. Nowadays, Tuberose concrete fractionation by supercritical carbon dioxide is extracted^[6, 7, 8].

Essential oil, concrete, and absolute Tuberose have antibacterial and antioxidant properties that make them used medicinally for healing^[9, 10, 11].



Fig 1: Tuberose - Single Flower Form ^[13]

Extracting essential oil from the Tuberose flower is expensive, so Perfumer created the Tuberose scent by blending the fragrance method. The researcher has shown that Linalool is the main ingredient to create Tuberose scent ^[14]. Linalool present in many essential oils in Vietnam has been investigated ^[15, 16]. So the purpose of our research is to blend the fragrance of Tuberose scent from Vietnam natural materials.

2. Research methodology

2.1 Methods are used to prepare tuberose fragrance

We created Tuberose scent based on the structure of the fragrance and main notes. The structure of the fragrance in this experiment included the Top notes, the Body note and End note. The main notes show in Table 1.

Table 1: Main notes in the Tuberose scent

N ^o	Notes in Tuberose scent	Fragrant substance	Attention
1	Floral notes	Floral notes with odor of Tuberose, Lily of the valley, Carnation, Ylang ylang, Laurel, Violet, Lilac and Rose flower	Main ingredient
2	Woody notes	Woody notes with odor of Sassafras, Sandalwood, Cedarwood, Vetiver, Cinnamon bark oil	Main ingredient
3	Animalic notes	Musk Civet absolute	Sub-ingredients
4	Spicy notes	Spicy notes with odor of Camphor, Coriander oil, Clove oil, Basil oil, Ginger oil	Sub-ingredients
5	Green notes	Green notes odor of grass, weed	Sub-ingredients
6	Sweet notes	Sweet notes odor of Vanilla, Coumarin	Sub-ingredients
7	Fruity notes	Fruity notes odor of Orange, Mandarin, Grapefruit, Lemon	Sub-ingredients

We carried out blending fragrance on a small scale (10g) to choose the right Tuberose scent, continued until the desired results were obtained and then carried out on a large scale (100g) and finally test of the obtained product. Fragrance tested in 0.5% shampoo and 5% perfume by weight.

2.2 Method of Evaluation

Currently in blending fragrance, people judge fragrance mainly by human sense of smell. Fragrance is diluted 10-20 times with an odorless diethyl phthalate (DEP) solvent, then a special paper is used and the nose's olfactory is used to

evaluate the aroma.

3. Results

The results of blending fragrance of Tuberose scent are shown in Table 2. We have blended fragrance of Tuberose odor for cosmetic FTC and for perfume FTP. Floral notes and Woody notes are Main ingredients odor of Tuberose. The proportion of floral notes of FTP is higher than FTC so that fragrance is suitable for perfume and the ratio of Woody notes of FTC is higher than FTP for fragrance to be suitable for cosmetics.

Table 2: The composition of Tuberose odor

N ^o	Material	Fragrances Wt%			Notes	Composition
		Cosmetic (FTC)	Perfume (FTP)			
1	Citral dimethyl acetal	10	10	50	Stimulant group	Top note
2	Eucalyptol	20	20			
3	Citryliden acetaldehyde	10	10			
4	Cinnamaldehyde	10	10			
5	Linalool	110	150	660	Floral notes	Body note
6	Tuberose absolute	50	60			
7	Terpineol	50	60			
8	Hydroxy citronellal	60	75			
9	Eugenol	10	15			
10	Isoeugenol	10	15			
11	Nerol	10	15			
12	Geraniol	10	15			
13	Jasmin oil	40	60			
14	Ylang-ylang absolute	40	60			
15	Laurel absolute	20	30			
16	Hyacinth absolute	10	15			
17	Ionone	10	15			
18	Methyl ionone	10	15			

19	Ionol	10		15			
20	Ionyl acetate	10		15			
21	Allyl ionone	10		15			
22	Citronellol	10		15			
23	Sassafras oil	10		5			
24	Sandalwood oil	100		50			
25	Cedarwood oil	40		20			
26	Vetiver oil	80		40			
27	Cinnamon bark oil	10	260	5	130	Woody notes	
28	Poumu oil	20		10			
29	Musk Civet absolute 3%	20	20	20	20	Animalic notes	
30	Camphor	5		5			
31	Coriander oil	5		5			
32	Clove oil	5		5	25	Spicy notes	
33	Basil oil	5		5			
34	Ginger oil	5	25	5			
35	Verbena oil	10		5			
36	Eucalyptus citriodora	10		5			
37	Marjoram oil	10	30	5	15	Green notes	
38	Coumarin	20		5			
39	Vanillin	20	40	5	10	Sweet notes	
40	Orange oil	5					
41	Lemon oil	5		5			
42	Mandarin oil	5		5			
43	Grapefruit oil			5			
44	Geranyl acetate	5					
45	Geranyl methyl ether	5		5	30	Fruity notes	
46	Citronellyl acetate	5					
47	Linalyl acetate	5		5			
48	Linalyl cinnamate	5	45	5			
49	Linalyl formate	5					
50	Canarium resin	10		10			
51	Benzoin resin	10	50	10	50	Fixative group	Ent note
52	Agarwood resin	30		30			
	Total	1000	1000	1000	1000		

4. Discussion

4.1 Floral notes

4.1.1 Linalool

Linalool is the main ingredient, the backbone of the scent of Tuberose. The odor of Linalool has displayed a very attractive floral, Linalool is the fragrance ingredient for many fragrances. It is used to fragrance Lily of the Valley, Narcissus, Mimosa, Orchid, Ylang-ylang, Lilac, Cyclamen flower. We used a percentage of Linalool 110% in the scent of lily for cosmetics FTC and 150% in perfume FTP.

4.1.2 Flower extracts

The extracts of Tuberose absolute, Jasmin oil, Ylang-ylang absolute, Laurel absolute, Hyacinth absolute are the important ingredients that create the smell of Tuberose. Jasmin oil is an ingredient with a powerful, honey-like, sweet, and Jasmin odor. Ylang-ylang absolute has a sweet, narcotic, warm odor. Laurel absolute has a scent similar to Ylang-ylang like odor. Hyacinth absolute has a warm and sweet odor. Flower extracts have created a gentle and seductive natural fragrance for Tuberose flowers. We used a percentage of them from 10 to 60 % in the scent of Tuberose for cosmetics and perfumes.

4.1.3 Aromatic monomers with floral odor are isolated and synthesized from essential oils

Terpineol with Lilac odor; Hydroxy citronellal with Lily of the Valley odor; Isoeugenol and Eugenol with Carnation odor; Nerol, Geraniol and Citronellol with Rose odor; Ionone, Methyl ionone, Ionol, Ionyl acetate, Allyl ionone with Violet odor. We used a percentage of them from 10 to 75% in the scent of Lily of the Valley for cosmetics and perfume.

4.2 Woody notes

Sandalwood oil Sandalwood oil displays a balsamic sweet, rich, warm, and woody odor with a slight harmonious undertones. This essential oil is one of oldest perfumistically most valuable and most expensive of the raw material available to the perfumer. It is used to give classic woody notes in many odor. We used a ratio of 50 to 100% in the scent of Tuberose scent.

Cedarwood oil with harmonious, soft odor display asweet notes. We used a ratio of 20 to 40% in the scent of Tuberose scent.

Vetiver oil Vetiver oil displays a heavy, woody, earthy odor with sweet-sour accents and woody-balsamic undertones.

This oil is used mostly woody odor, it is an important component of fixative odor. We used a ratio of 40 to 80% in the scent of Tuberose scent.

Cinnamon bark oil displays extremely powerful, warm spicy, typical of cinnamon. When used at very low levels it elicits a very warm and cosy effect. We used a ratio of 5 to 10% in the scent of Tuberose scent.

Poumou oil and Sassafras oil display sweet woody odor. We used a ratio of 5 to 10% in the scent of Tuberose scent.

5. Conclusion

We have blended the odor of Tuberose FTC for cosmetics, FTP for perfume from materials derived from the natural origin of Vietnam. Linalool is the main ingredient, the backbone of the scent of Tuberose. It is used a percentage of 110% in the scent of Tuberose for cosmetics and 150% in perfumery, creating a seductive and attractive natural fragrance. FTC and FTP fragrance are a harmonious combination of Floral notes, Woody notes, Animalic notes, Spicy notes, Green notes, Sweet notes, and Fruity notes.

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