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Research Article

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The essential oil chemotype of *Citrus reticulata* Blanco peel

Jian Wang

Department of Traditional Chinese Medicine (TCM), Chongqing Medical University, Chongqing, China

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ABSTRACT

Enlightened by Lota's report, this paper first analyzes the volatile oil chemotype of Citrus reticulata Blanco peel from different cultivars according to the contents of four compounds such as Limonene, γ-Terpinene, Linalool, and Benzoic acid, 2-(methylamino)-, methyl ester (or called Methyl methanthranilate).In fact, all oils have Limonene as a primary component, and they all can be classified as the chemotype of Limonene. And most oils comprise γ-Terpinene as the second high amount component, some oils comprise the characteristic components as Linalool and Methyl methanthranilate. Then, based on the standard that ifγ-Terpinene≥ 9.0%, Linalool ≥ 4.0%, Methyl methanthranilate≥ 1.0%,the oil can be continually sub classified as the chemotype of γ-Terpinene, Linalool,orMethyl methanthranilate. Following this principle, the oilchemotype of different cultivars in dissimilar area presents somesimilarities and differences.

Keywords: chemotype; essential oil; peel; *Citrus reticulata* Blanco; Chinese material medica

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INTRODUCTION

Citrus reticulata Blanco belongs to the Family ofRutaceae, Genus as*Citrus* L., which has many cultivars and been planted all over the world. The peel essential oils from *C.reticulata* Blanco play an important role in the area such as medicine, cosmetic, food, flavor, etc., and its output accounts for about 30% of the whole essential oils output in the world[1-3]. In China, the peel of *C. reticulata* can be used as two kinds of Chinese materiamedica (CMM) as Citri Reticulatae Pericarpium(CRP)or called*Chenpi* and Citri Reticulatae PericarpiumViride (CRPV)or called*Qingpi*. CRP is the dried pericarp of the ripe fruits of *C.reticulata* or its cultivars. PCRVis the dry pericarp of the young or immature fruits of *C. reticulata* and its cultivars. The main cultivars are *C. Reticulata*'Chachi', *C. Reticulata*'Dahongpao', *C. Erythrosa*Tanaka, *C. reticulata*'Tangerina', etc. in China[1,4].

Lota*et al* [5] differentiated the peel oils chemotypes of different cultivars of *C.reticulata*by the contents of Limonene and γ-Terpinene. In this way, they distinguish two chemotypes as Limonene and Limonene/γ-Terpinene. In Lota's opinion, the oil could be classified as limonene/γ-terpinene if γ-terpinene content is higher than 10.0%.

Implied and based on Lota's result, this paper first systematically analyzes the peel oil chemotype of different culvitars produced in dissimilar areas.

EXPERIMENTAL SECTION

Through analyzing the research outcome by Lota, us, and others, we can see that, in fact, all peel oils from *C. reticulata* consist of Limonene as a primary component, and most oils comprise γ-Terpinene as the second component in amount[5-15]. So, all oils can be classified as the chemotype of Limonene. Then, according to the content of γ-Terpinene, it can be continually sub classified as the chemotype of Limonene or Limonene/γ-Terpinene. Through analyzing reports by Lota, us, and others[5-15], we think the oil should be classified as Limonene/γ-Terpinene if the γ-Terpinene content is not less than 9.0%.

Whereas except for these two important components, we noticed another two characteristic components as Linalool and Benzoic acid, 2-(methylamino)-, methyl ester, (also called Methyl methanthranilate), so the peel oilschemotype can be successively sub classified according to the content of these two compounds. Based on the reports' outcome[5-15], we think if the linalool content is larger or equal to 4.0%, the chemotype can continually be classified as Linalool, and if theMethyl methanthranilate content is not less than 1.0%, it can be sub classified to the chemotypeof Methyl methanthranilate. The chemotypeof some cultivars from different areas can be seen in Table 1.

Tab. 1 Theoils chemotype from different cultivars produced in dissimilar area

Cultivar	Area	Content (%)				Chemotype
		Limonene	**γ-Terpinene (≥9.0)**	**Linalool (≥4.0)**	**Methyl methanthranilate (≥1.0)**	
C. reticulata' Dahongpao'	Chongqing, China [6]	43.8-77.6	3.8-8.6	1.2-15.7	nd	Limonene or Limonene/Linalool
	Jiajiang,Sichuan, China[7]	45.6-56.3	6.1-7.8	4.4-11.9	0.2-0.7	Limonene/Linalool
	Zigong,Sichuan, China [9-10]	67.8-82.2	5.3-7.0	5.7-16.0	0-0.1	Limonene/Linalool
C. reticulata' Ponkan'	Pujiang,Sichuan, China [8]	56.9-67.7	9.3-11.1	4.8-7.9	nd	Limonene/γ-Terpinene /Linalool
	Kochi, Japan [3]	80.3	4.7	0.6	nd	Limonene
C. reticulate 'Chachi'	Xinhui,Guangdong, China [9-10]	48.8-73.4	10.8-22.4	0.4-1.0	1.7-7.2	Limonene/γ-Terpinene/Methyl methanthranilate
C.erythrosa Tanaka	Changsha,Hunan, China[9-10]	77.2-83.1	4.2-5.5	0.3-0.8	0.9-2.1	Limonene or Limonene/Methyl methanthranilate

nd, not detected.

RESULTS AND DISCUSSION

Based on the standard, the oil chemotype of different cultivars in dissimilar area presents some similarities and differences. For example, the oils chemotype from the cultivar as *C. Reticulata* 'Dahongpao' planted in different place of China mostly can be classified as the chemotype of Limonene/Linalool. The oils from the cultivar of *C. Reticulata* 'Chachi' produced in Guangdong of China can be classified to another chemotype as Limonene/γ-Terpinene/Methyl methanthranilate.

CONCLUSION

So, based on the above analysis, we can draw the conclusion that by the standard as γ-Terpinene (≥ 9.0), Linalool (≥ 4.0), Methyl methanthranilate (≥ 1.0), theoil chemotype can be sub classified continually.

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