



Essential News

Essential Therapeutics

The Ultimate Professional Aromatherapy Range

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Welcome to our April Issue

In our this issue, we finish the 3 part article on *Aromatic Heresies*, with real examples of essential oil adulteration - and what you can do about it.

To see part 1 & 2 of this story, please go to www.essentialtherapeutics.com.au and see the PDF of Essential News Vol. 21 & Vol 22.

Vanuatu Sandalwood – A Classic Sandalwood Oil.

The essential oil derived from *Santalum austrocaledonicum* is beautiful, very comparable to Indian Sandalwood and now available as a special 'vintage' essential oil. See our story on page 3.

Best Regards,

Ron Guba, Editor



Santalum austrocaledonicum
leaves and flowers

AROMATIC HERESIES

On Essential Oil Adulteration Part 3

Here is the final installation of our story. I continue with the subject of how essential oils are adulterated by disreputable (and/or ignorant) suppliers.

Crime Scene Investigation case file #22378

Grapefruit oil for "a good price".

We tested a sample of cold pressed Grapefruit oil offered by another company as 100% pure & natural; well below the usual price. Upon analysis, we noted that the oil was low in sesquiterpene compounds, especially nootkatone, which contributes most to the characteristic aroma of grapefruit.

We found that the oil had been mixed with cheap citrus terpenes which are a by-product of the flavour industry.

You might think that this type of adulteration is easy to detect. However, it requires in-depth knowledge of the oils and analytical methods to understand the sometimes subtle variations this 'blending' method can produce.

Essential Oil Blends # 2 Here we go further down the trail of adulteration. In this case we find blends that have been made by using some of a real essential oil, blended with less expensive essential oils or fractions, along with synthetically produced 'nature identical' aroma chemicals. This category includes total 'reconstructions', where none of the named essential oil is present, as in preparing a 'reconstituted' Melissa oil from much less expensive oils rich in citral (like May Chang) and other aromatic compounds.

CSI case file # 65343 It smells something like Ylang Ylang... This is an example of an Ylang Ylang blend that has been offered in small bottles as 100% pure & natural 'Ylang Ylang extra' for Aromatherapy use.

Real Ylang Ylang extra oil (which is what we provide!) is the first fraction of the distillation of Ylang Ylang flowers. It is intensely sweet and commands the highest price as compared to further fractions of the oil, Ylang Ylang 1st, 2nd and 3rd.

When we analysed a sample of the "Ylang Ylang extra" blend, we could see that it contained some real Ylang Ylang oils – a tiny amount of Ylang extra, plus a good amount of Ylang 3rd fraction.

Then, the majority was a blend of synthetic and natural compounds, including synthetic "nature identical" fragrance compounds like benzyl benzoate, benzyl salicylate and linalool.



As you might imagine, this 'Ylang Ylang extra' fragrance blend is a fraction of the cost of the true essential oil. It is pleasant in aroma and is

somewhat close to the aroma of the true oil.

Having said that, will the fake oil harm anyone? No, it is not harmful or toxic and its real use would be for inexpensive **fragrance** applications – not therapeutic use.

But, when a blend like this is promoted as an authentic essential oil, it is a case of fraudulent trading.

Do not buy extended oils. Another common practice of disreputable suppliers is extending authentic essential oils with inexpensive diluting compounds. The addition of mineral oil or inexpensive vegetable oils is obviously easy and can be harder to detect than you might imagine.

CSI case file # 7865 Oily Sandalwood Oil. The cost of Indian Sandalwood oil has increased dramatically over the past few years, due to over-harvesting of Sandalwood trees and high demand for the oil. Early last year, we looked at a sample of a Sandalwood oil from a supposedly reputable supplier in the USA where the price seemed too good to be true.

The GC/MS analysis of the oil showed that it looked like an authentic Sandalwood oil.

However, performing the more basic tests for the optical rotation, specific gravity and refractive index of the oil, it was out of specification on all three tests.

We surmised the Sandalwood oil contained the addition of some 50% of a vegetable oil – a very oily oil.

Was this fraud on the supplier's behalf? Or a mistake? In this case, the supplier replied that he had only performed a GC/MS test, being the most sophisticated and expensive analytical method.

The problem in this case is that because a vegetable oil is much 'heavier' than the volatile essential oil components. When a tiny sample is injected into the injector port of gas chromatography equipment, most of the sample is vented off by the pressurised carrier gas before it enters the very thin and hollow detection column. In the venting process, any vegetable oil is removed and hence is never detected. So, the advanced technology of the GC equipment can be fooled by a simple adulteration!

This is why we always perform a range of tests on our essential oils – in this case the three more basic tests all showed there was a problem and the oil was immediately rejected. As well, the simple test of applying a spot of oil onto brown paper will show an oil spot that does not evaporate over time.

Inexpensive compounds, such as isopropyl myristate, dipropylene glycol and diethyl phthalate are other common extending agents, routinely used in fragrance applications. In this case, these compounds will show up on a standard gas chromatography analysis for essential oils. However, as they are odourless, a consumer (without analytical equipment!) cannot detect any real difference in the aroma of a diluted essential oil.

These are just a few of the CSI cases we have on file...

"Reconstituted" Melissa Oil

True Melissa essential oil is a precious and expensive product. It requires from 3,000 to 4,000 kg of fresh Melissa leaves and stems to produce only 1 kg of essential oil. Its composition is complex, but it is primarily a 'lemon-scented' essential oil, with the citral-type oil containing the lemon-scented components of about 52% citral and 4% of citronellal.

Because of the expense of True Melissa oil, fragrance companies created inexpensive 'reconstituted' Melissa fragrance oils that contain no Melissa oil at all.

A 'reconstituted' formula can contain some Citronella essential oil, citral, natural linalool and geraniol, lemon oil terpenes, beta-caryophyllene and on.

We still occasionally see these 'reconstituted' Melissa oils offered as 100% pure & natural Melissa essential oil by some 'Aromatherapy' suppliers.

Melissa plant and flower



What can one do about the 'subtle art' of adulteration?

First and foremost, stick with reputable suppliers. Australia is unique in that essential oils can be listed as therapeutic goods.

If a company has a therapeutic goods manufacturing license, this means that they must adhere to Good Manufacturing Practice (GMP) standards, an international pharmaceutical standard that includes comprehensive quality assurance procedures.

Further, a licensed manufacturer is then audited by the Therapeutic Goods Administration (TGA) on a regular basis for compliance. Part of the audit relates to QA issues. In terms of essential oils, the company must **prove** that these essential oils are real and 100% pure & natural.

Aromatic Heresies continued...

This process of **independent auditing** by a governmental Health Department is unique in the world.

If you want to use guaranteed real essential oils for any purpose, especially for therapeutic benefit, use essential oils from licensed TGA suppliers. This is certainly the case for herbal medicines and complementary medicines in general. Why would we want to settle for less with essential oils?

For companies that do not provide essential oils under a TGA license and standards, there is no auditing and nothing in place to prevent adulteration. Unless a company is making a specific therapeutic claim about an essential oil, the TGA has no authority in the matter. Simply calling an essential oil 'therapeutic grade' is not illegal *per se*, but is certainly getting close.

In the non-regulated marketplace, here and globally, all manner of essential oils are sold as "Aromatherapy" oils, where some are excellent in quality and others are highly adulterated.

Essential oil adulteration is about consumer fraud, specifically "false or misleading representations". These laws are handled by the Australian Competition and Consumer Commission (ACCC).

As of this writing, companies involved in selling adulterated oils have not been prosecuted under these laws.

It is difficult to say what else would be a 'give away' for those selling adulterated oils. I have seen numerous 'certificates of analysis' that look impressive, but are not worth the paper they are printed on. Proper botanical names and other information may be provided, even using the approved labelling style of essential oils listed with the TGA to give the label the 'therapeutic' look.

Don't ever buy a 'commercial' oil, such as 'Rosemary commercial' or 'Lavender commercial'. This is a well known euphemism for blended oils for fragrances. Still, such oils have been promoted as '100% pure & natural'.

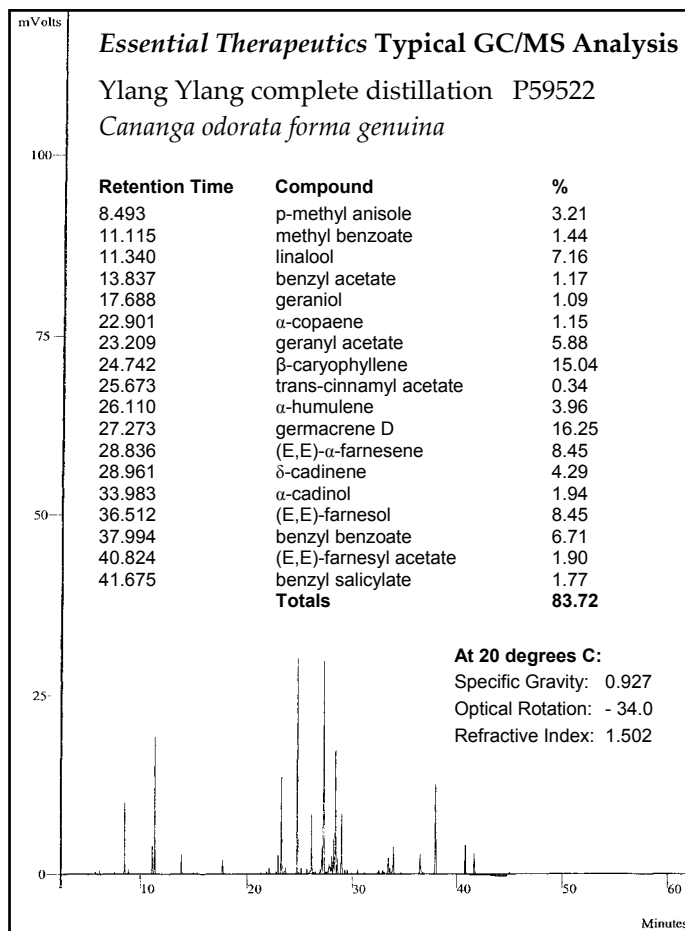
Price can certainly be a guide, but not an absolute. It is good to remember that there is no "discount warehouse" for essential oils! When essential oils are sold at substantially lower prices than most, it should set off alarm bells, whatever you are told by the company!

In summary, the 'subtle artists' of essential oil adulteration remain profitable in business today, as they did 200 years ago - and this is likely to remain the case.

It is useful to have a healthy dose of scepticism, ask all the hard questions of any supplier and be careful of "bargain prices".

Essential Therapeutics is a licensed TGA supplier and we only offer **real** essential oils. We have expert essential oil analysts in our lab and we fully test every oil to guarantee authenticity.

Please feel free to ask all the hard questions you like and you will get a real answer!



An example of a typical full analysis we perform on every essential oil.

Vanuatu Sandalwood A Classic Sandalwood Oil

As many of you already know, 'Indian' Sandalwood (*Santalum album*) is in very short supply and the price has risen dramatically over the past few years, as the Sandalwood trees in India have been long over-exploited. Plantation plantings of *S. album* trees have taken place in India and northern Western Australia (in the Ord River area) over recent years. Harvesting of mature trees for essential oil production however, is still some ten to twelve years away.

It is interesting to note that 'Indian' Sandalwood is in fact a native of Indonesia and parts of the Northern Territory of Australia. Although still debated, Sandalwood appears to have made its way to India via the

Vanuatu Sandalwood continued...

Lesser Sunda Islands of Indonesia (such as Timor) via ancient trade routes.

Our own native Australian Sandalwood, *Santalum spicatum*, has again become popular for aromatherapy, fragrance and other uses. (See *Essential News* Vol. 1)

There is another Sandalwood species, *Santalum austrocaledonicum*, which is native to the islands of Vanuatu and New Caledonia. This species along with other similar species such as *Santalum yasi* (Fiji and Tonga), *Santalum freycinetianum* (Hawaii) and *Santalum fernandezianum* (Juan Fernandez Islands, off Chile) were all over-exploited during the great 'Sandalwood Trade' era, beginning in the early 19th century.

Of all the Sandalwood species, Vanuatu Sandalwood produces an essential oil that is most similar to 'Indian' Sandalwood oil, containing up to 60% of α - & β -santalols (considered the most important components, at least from a fragrance perspective). See comparison below.

<i>Santalum austrocaledonicum</i>		<i>Santalum album</i>	
Compound	%	Compound	%
α -santalene	0.54	α -santalene	1.05
α -trans-bergamotene	0.11	α -trans-bergamotene	0.24
epi- β -santalene	0.44	epi- β -santalene	1.20
β -santalene	0.43	β -santalene	1.75
trans-nerolidol	0.40	trans-nerolidol	trace
dendrolasin	0.14	dendrolasin	trace
α -santalol	40.01	α -santalol	51.34
epi- α -bisabolol	trace	epi- α -bisabolol	trace
cis- α -trans-bergamotol	5.39	cis- α -trans-bergamotol	4.22
epi- β -santalol	3.63	epi- β -santalol	4.84
β -santalol	15.17	β -santalol	20.08
(E,E) farnesol	0.80	(E,E) farnesol	trace
cis-nuciferol	11.09	cis-nuciferol	1.40
cis-lanceol	3.45	cis-lanceol	1.68

In my own personal opinion, I find the fragrance of Vanuatu Sandalwood oil to be most pleasing of all Sandalwood oils, with its classic Sandalwood scent and smoky undertones.

Since the late 1990's, the Food & Agriculture Organization of the United Nations has been working with Vanuatu to establish a working strategy for

for conserving and managing Vanuatu Sandalwood.

At present, the harvesting of Vanuatu Sandalwood has become sustainable by a number of means:

- There is only a three month per year harvesting and buying season that avoids the natural flowering and fruiting cycle of the trees.
- An 80 ton per year harvesting quota that is accessible by only two approved license holders. License holders cannot harvest or purchase immature wood under direction from the Vanuatu Department of Forestry.
- Local villagers on Vanuatu are being given free seedlings and training for the growing of Sandalwood trees on their lands. In general, the planting of Sandalwood trees by villagers is seen as a sustainable and simple cash crop that reduces any reliance on wild harvested trees.
- The major producer and license holder (TRA Ltd.) has set up a large Sandalwood plantation on the island of Efate. When fully completed, the plantation will sustain 60,000 trees.



Young Sandalwood trees growing with host trees in plantation, Efate, Vanuatu. Courtesy TRA Ltd.

In terms of the uses of Vanuatu Sandalwood, we can say that the essential oil can be used for all the same applications as the Indian Sandalwood.

Sandalwood is regarded in Ayurvedic medicine as a definitive anti-*pitta* essence – very cooling to fiery, overheated conditions. Useful for fiery conditions of the skin (dry, irritated, chapped, acne) and nervous system (as in neuralgia and sciatica); a tonic for the lymphatic and circulatory system; beneficial in respiratory complaints, as with coughs and laryngitis. Overall, Sandalwood is an excellent cooling & 'grounding essence', long used in religious and spiritual practices in Asia.

A quote regarding Sandalwood from the Ayurvedic physician, Dr. Vasant Lad, from the book *The Yoga of Herbs*:

“Sandalwood cools and calms the entire body and mind, with its influence spreading throughout the circulatory, digestive, respiratory and nervous systems. It relieves fever, thirst, burning sensation and stops sweating. A few drops of Sandalwood oil applied to the third eye will relieve heat and thirst and is good for fever or overexposure to the sun.

Sandalwood helps the awakening of intelligence. Its *prabhava* (or special power) is to help open the third eye, to increase devotion and promote meditation. It also aids in the transmutation of sexual energy.

Sandalwood, a good addition to other formulas, reduces fever; it is good for almost any inflammatory conditions and for cleansing the blood. Externally the oil or paste can be used for most infectious sores or ulcers. In short, Sandalwood is a very good anti-Pitta medicine”.



Young Sandalwood trees in nursery. Courtesy TRA Ltd.

Essential Oil Safety:

Sandalwood (Indian, Australian and Vanuatu) essential oils are very safe essential oils. The ‘minimum lethal dose’ (LD50) is greater than 5 grams per kg of body-weight.

Sandalwood has a long history of use, including its use as an ingestible medicine for urinary tract infections, at a dosage of up to 5 grams per day. It is also very mild on the skin and non-sensitising.

Formula Example: *Sandalwood Dermatitis Gel*

For relief of eczema and inflamed skin conditions. To prepare 100mL total:

Essential oils and extracts:

Vanuatu Sandalwood	1.5mL
Calendula CO2 extract	2.0mL
German Chamomile Extra	1.0mL

Vegetable & Infused oils:

Rose Hip or Hemp seed oil	6mL
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St. John’s Wort Infused oil 6mL

Mix into 90mL of a base gel, such as Double Strength Aloe Gel or Amigel.

Test for sensitivity first. Apply twice daily as required.

In summary, **Vanuatu Sandalwood** is an exquisite oil that is truly worth experiencing.

We have a limited supply of our first batch of Vanuatu Sandalwood oil in stock and we are providing this in 5mL bottles for you to try at a special introductory price. Please contact your nearest distributor for more information.



Essential Therapeutics

The Ultimate Practitioner Range

For your nearest Distributor, please contact:

Essential Therapeutics Head Office

39 Melverton Drive, Hallam VIC 3803

Tel (03) 8795 7720 Fax (03) 8795 7375

Email: esstherapeutics@ozemail.com.au

Web: www.essentialtherapeutics.com.au

Victoria - Osborne Health Supplies

Tel (03) 8831 3888 Fax (03) 8831 3898

South Australia - BettaLife Distributors

Tel (08) 8351 8455 Fax (08) 8351 8722

New South Wales - Select Botanicals

Tel (02) 9817 0400 Fax (02) 9817 0500

No. New South Wales - Perfect Scents

Tel/Fax (02) 6584 0027

Western Australia - Tish n' Tosh

Tel (08) 9473 9900 Fax (08) 9473 9966

Queensland - Natural Remedies Group

Tel (07) 3889 8830 Fax (07) 3889 8848

Queensland - Sunstate Therapy Supplies

Tel (07) 5493 6555 Fax (07) 5493 6566

Tasmania - Cartledge Agency

Tel (03) 6344 5466 Fax (03) 6343 2472

New Zealand - Wellpark College

Tel (64) 9360 0560 Fax (64) 9376 4307

Taiwan - Latifa

Tel (886) 328 41700 Fax (886) 632 841900

Hong Kong - Konway International

Tel (852) 3100 0025 Fax (852) 3579 5158