

The Quality of Essential Oils

By Jade Shutes, BA, Dipl. AT., Cert. Herbalist

The quality and authenticity of the essential oils we utilize are the very heart and foundation of aromatherapy.

The quality of essential oils is often a contentious subject bringing up feelings of protectiveness and challenging beliefs. I have written this article, not so much as a definitive answer to discerning quality, but rather to raise some valuable points of reference.

When I first began my aromatherapy education in England (1988) there were only a handful of companies selling essential oils specifically to the aromatherapy market. What is interesting to note about the British essential oil market is that the first few aromatherapy companies were designed to meet the needs of aromatherapy practitioners. This is in stark contrast to the later developing American market which was primarily retail-driven. Because the British market was practitioner-driven, the essential oil quality was initially quite high. It was only years later as interest in aromatherapy spread to the retail market that a plethora of essential oil companies arose both in Britain and even more so in the United States. Naturally (no pun intended) with this rise in the number of essential oil suppliers, extremes in quality variation also arose. With such an increase in companies offering essential oils, differentiating between companies selling high quality and low quality essential oils became incredibly challenging particularly for the newcomer.

As an aromatherapy practitioner I feel blessed to have grown up, so to speak, with the aromatherapy essential oil trade. I feel even more blessed to have first experienced the high quality of European essential oils and then to have come into the United States to experience essential oils from different companies here. I must say, however, that even after 18 years in the industry as a practitioner, an educator, a student and a researcher in the field of aromatherapy, it continues to be a challenge in answering the question “How do I know where to buy high quality essential oils?” or “where do I find high quality therapeutic grade essential oils?” This difficulty arises mostly from the clever marketing that happens in the essential oils market and the fact that not a company out there claims to sell low

quality or adulterated essential oils, after all, how could they do so and still have sales?

This paper is being written not in the hopes of bringing the question of quality to an end but rather to offer up information to better enable you to understand some of the fundamental issues you may encounter when searching for a high quality, unadulterated, genuine, and authentic essential oil in the market place.

Let's start with the marketing term: Therapeutic grade

For those of you who believe you already know what this term means, I would ask that you keep an open and willing mind. I understand completely how contentious the issue of quality is. Firstly, to my knowledge the term 'therapeutic grade' arose during the 90's and did not exist prior to that time. It was invented by some very clever marketers who wanted people to believe that there were somehow therapeutic grade essential oils and then all others. The main company marketing this concept also wanted individuals to believe that they and they alone somehow had the only therapeutic grade essential oils on the market (as if the market had somehow not existed until they existed).

After the concept of 'therapeutic grade' entered the market other companies quickly joined in, saying that they too offered 'therapeutic grade'. Today, just about every company selling essential oils states that their essential oils are of 'therapeutic grade'. With the concept of 'therapeutic grade', also known as Grade A, came other grades such as grade B, C, and so on. The point here is that some clever marketers were absolutely successful in their aspirations to get the word 'therapeutic grade' into the vernacular of the aromatherapy industry.

Aromatherapy buyers have perhaps become overawed with the idea that there must be a 'therapeutic grade' and that is what they are looking for. (Sometimes it must feel like they are looking for the holy-grail.) They call aromatherapy companies and ask "do you sell therapeutic grade essential oils?" What I would like to know is if there is actually a company out there that states it sells 'non-therapeutic grade' or 'grade b, c, or d' essential oils. Actually, just did a search and NOPE, not a company out there claiming to sell grade b, c or d essential oils and not a one selling non-therapeutic grade. Very suspicious!!

The truth is that there is no such thing as 'therapeutic grade' (or grade b, c, or d) in the sense that some organization or higher power has bestowed on an

essential oil line. A grading system, quite simply, does not exist for essential oils. It is a product of marketing and marketing alone. And if one actually spends time thinking about this it makes perfect sense. From a marketing perspective there had to be another way to market a line of essential oils other than saying 'we sell the best essential oils on the market' which is rather boring in comparison to 'therapeutic grade'.

According to Burfield and Kirkham (2006-07), "many aromatherapists have unfortunately become unwitting victims of a marketing ploy by essential oil traders that advertise "approved" essential oils of 'therapeutic grade'. Let us be quite clear on this – there is no such thing as a 'therapeutic grade' essential oil, and no quality standards for the authentication of essential oils specifically exist in aromatherapy."

So where does that leave us? Shortly we will explore what 'therapeutic grade' means to individuals who utilize essential oils therapeutically. For now, let us explore other marketing terms which may arise in your search.

Weeding through the market place:

While searching for essential oils on the internet you may come across some companies claiming to be approved by the ISO or to meet and/or exceed guidelines established by AFNOR or to be GRAS approved and even one company claiming to have Certified Pure therapeutic grade/FDA approved. What exactly do these terms mean?

CERTIFIED PURE THERAPEUTIC GRADE:

This is a relatively new trademark by a multi-level marketing company. It gives the appearance of being approved by some kind of higher authority and it has been said that the company states it is a FDA approved to use this label. According to Elston (2009), "This registered word mark has not been provided to them by the FDA as they claim and is meaningless in proving that an outside certifying body has declared or designated that DoTERRA's essential oils are certified pure therapeutic grade. DoTERRA, LLC owns the right to exclusive use of the mark (however not the exclusive right to the actual words "Certified Pure Therapeutic Grade" which is revealing) This seal or word mark is nothing more than a commercial trademark that they have registered and paid a fee for".

ISO: INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

The International Organization for Standardization (ISO) is a worldwide federation of national standards bodies from over 100 countries, one from each country. ISO is a non-governmental organization established in 1947. The mission of ISO is to promote the development of standardization and related activities in the world with a view to facilitating the international exchange of goods and services, and to developing cooperation in the spheres of intellectual, scientific, technological and economic activity. ISO's work results in international agreements, which are published as International Standards. In addition to quality and environmental management systems, ISO also publishes standards that set criteria for film speed, data stored on ATM and credit cards, wine glasses for use in competitions, crayons, and more. (<http://www.systemsquality.com/14000/FAQs.htm>) The ISO also provides definitions such as the one below for 'essential oil'.

The International Organization for Standardization (ISO) in their Vocabulary of Natural Materials (ISO/D1S9235.2) defines an essential oil as follows: "An essential oil is a product made by distillation with either water or steam or by mechanical processing of citrus rinds or by dry distillation of natural materials. Following the distillation, the essential oil is physically separated from the water phase."

According to Burfield and Kirkham (2006-07), The ISO is the main certifying body recognized for its universally accepted standards for individual essential oils. Harris (2006) points out that ISO and AFNOR (discussed below) do not set standards for differentiating the quality of essential oils rather they provide specifications for 'industries to use as a guide to essential oil compositions so that new batches could be utilized with minimum alteration in flavor or fragrance to the finished products'. Harris states further that "whilst it is sometimes advantageous to know whether an essential oil falls within a 'normal' range, it has no inference to therapeutic properties. An essential oil can be very therapeutic and yet not fall within any accepted standard". An example of ISO standards is provided for Texas and Virginia Cedarwood oils.

International (ISO) standards exist for both the Texas and Virginia cedarwood oils. For the former, the alcohol content, expressed as cedrol and in the range of 35-48 percent, is specified with a minimum cedrol content of 20 percent. For the Virginia cedarwood oil, a maximum cedrol content of 14 percent is stipulated. In

the United States, recent FMA standards have replaced older EOA standards and are available for Chinese, Texas and Virginia cedarwood oils. These standards specify that for the Texas and Virginia oils the alcohols content (cedrol and related isomers) must range between 25-42 percent for the Texas oil and between 18-38 percent for the Virginia oil. The Chinese oil must have a minimum alcohol content of 8 percent (Coppen 1995). <http://www.fao.org/docrep/X0453E/X0453e11.htm>

NOTE: FMA stands for the Fragrance Materials Association. The members of the Fragrance Materials Association of the United States (FMA) include companies that invent and then manufacture mixtures of fragrance ingredients for use in a wide variety of products, including fine fragrances, shampoos, soaps and detergents. The members of FMA also include the suppliers of those ingredients. To learn more about the FMA visit: http://www.fmafragrance.org/sub_pages/gi_aboutFMA.html

AFNOR

Association française de Normalisation (AFNOR) is the French national organization for standardization and is that country's ISO member body. (wikipedia) There are a few companies out there who claim that their essential oils are AFNOR approved as therapeutic grade or even that their essential oils meet or exceed AFNOR standards. Boy that sounds so good. As stated above, AFNOR does not set standards for differentiating the quality of essential oils rather they provide specifications for 'industries to use as a guide to essential oil compositions so that new batches could be utilized with minimum alteration in flavor or fragrance to the finished products'.

GRAS

"GRAS" is an acronym for the phrase **Generally Recognized As Safe**. Under sections 201(s) and 409 of the Federal Food, Drug, and Cosmetic Act (the Act), any substance that is intentionally added to food is a food additive, that is subject to premarket review and approval by FDA, unless the substance is generally recognized, among qualified experts, as having been adequately shown to be safe under the conditions of its intended use, or unless the use of the substance is otherwise excluded from the definition of a food additive. For example, substances whose use meets the definition of a pesticide, a dietary ingredient of a dietary supplement, a color additive, a new animal drug, or a substance

approved for such use prior to September 6, 1958, are excluded from the definition of food additive. Sections 201(s) and 409 were enacted in 1958 as part of the Food Additives Amendment to the Act. While it is impracticable to list all ingredients whose use is generally recognized as safe, FDA published a partial list of food ingredients whose use is generally recognized as safe to aid the industry's understanding of what did not require approval. (<http://www.cfsan.fda.gov/~dms/grasguid.html>)

According to Harris (2006), “a small number of essential oil suppliers are now labeling their products as having GRAS status and implying not too subtly that this means that they are of therapeutic quality and also safe for internal use. Whilst there are many essential oils that do possess GRAS status, like mint and neroli, this designation can in no way be indicative of therapeutic efficacy or risk-free intake via the oral route. Essential oils are used as flavor ingredients in a wide range of products and their inclusion in the GRAS category is dependent, in part, upon their defined safe maximum concentration limits in edible goods. These concentrations are generally low, as they allow for the repeated ingestion of foodstuffs on a daily basis, and thus guard against cumulative dosing and potential toxicity”. He ends this particular section with “individual chemicals can be recognized as GRAS, as can adulterated/synthetic essential oils”. Essential oils which have GRAS status therefore do not need to be pure, do not need to be organically grown, nor do they even have to come from a plant.

Along with the above items, some companies also appeal to our ‘desire’ for high quality essential oils by offering a GC/MS spec sheet on all their essential oils. Let us have a look at what a GC/MS spec is and what it may or may not tell us about the quality of an essential oil.

GC/MS spec report

A **gas chromatograph** is a chemical analysis instrument used to separate and identify individual constituents found within a given essential oil. Each chemical constituent of an essential oil will pass through the gas chromatograph instrument and different times and speeds. As each chemical is registered it will produce some type of peak, from very short to very tall. (See sample below)

A gas chromatography report reveals the peaks of different chemical constituents within a given oil, it does not, however, name the specific chemical constituent (e.g. linalol), for this a mass spectrometry must be used. **Mass spectrometry** is

a technique which allows for the detection of compounds (chemical constituents) by separating ions by their unique mass. Mass spectrometry is utilized to identify specific compounds registered on the gas chromatography report. A typical mass spectrometer has three basic parts: an ion source, a mass analyzer, and a detector. Different molecules have different masses, and this fact is used to determine what molecules are present in a sample. An individual trained in reading GC/MS data will then clearly identify the exact constituents and their quantity (e.g. 5% linalol, 25% camphor, and so on) present within a given essential oil sample.

According to Burfield (2005), “aromatherapists should not be too over-awed by the claims of essential oil traders, to the effect that GC-MS is the ultimate analytical tool. This simply is not true. When properly used it is a certainly a powerful technique, but when used sloppily by untrained operators, the interpretation of results may be of limited value”.

Interpretation of the information gained depends on the skill, experience and knowledge of the individual who does the analysis. A GC-MS report may fail to reveal the age and quality of an essential oil, particularly in relation to the quality an aromatherapist is looking for. So, in general, although a GC-MS report on a given essential oil is incredibly helpful, it should not be used as the sole definitive guide to purchasing a high quality, pure, unadulterated essential oil. Instead, it should be used along with an olfactory appraisal, confidence in the supplier and their intentions as a supplier (e.g. are they selling inexpensive essential oils to a general market or are they selling high quality, typically high priced essential oils specifically to practitioners of genuine aromatherapy), and other analytical techniques such as Thin Layer Chromatography, Infra-Red analysis, Specific gravity, Refractive index and Optical rotation.

The Value of GC/MS

Although a GC/MS spec sheet cannot reveal the specific quality of an essential oil, it does offer valuable information on the essential oil, specifically its chemical profile and authenticity. According to Harris (2006), in terms of therapeutic efficacy as related to pharmacological activity, the knowledge of the composition (full chemical analysis) is of paramount importance. A GC/MS spec report that is batch specific for the essential oil you are purchasing will support your understanding of the therapeutic applications of the essential oil and potential safety concerns.

Most aromatherapy practitioners have been trained to understand that chemical variations occur as a result of harvest time, country of origin, soil and climate conditions, part of plant used, distillation, transport and storage parameters. Bensouilah and Buck (2006) point out that as long as the essential oil chemistry remains within defined boundaries and occur due to environmental or genetic influences and not from adulteration, this is an accepted part of aromatherapy.

With all this, what then shall we look for?

It is a given that the vast majority of aromatherapy practitioners and perhaps even lay practitioners (home users) are seeking genuine and authentic, plant derived, preferably organic or wild crafted, unadulterated essential oils. This is how I personally would define 'therapeutic grade', although like Harris, I dislike the term. Finding them and knowing what to look for is a challenge, particularly given the power of marketing. What do we mean by the terms genuine, authentic, plant derived and unadulterated anyways?

The Oxford English Dictionary defines the terms genuine and authentic as follows:

Genuine (adj.) 1 truly what it is said to be; authentic. 2 sincere; honest.

Authentic (adj.) of undisputed origin; genuine.

To my knowledge Kurt Schnaubelt was the first to use the terms 'genuine' and 'authentic' in relation to essential oils. According to Schnaubelt (2004), a **genuine** essential oil means it is completely unaltered and an **authentic** essential oil means it is from a specified plant only. Which brings us to plant derived: essential oils used in aromatherapy should all be extracted from a specified plant species, e.g. *Lavandula angustifolia* versus *Lavandula x intermedia*.

And this naturally leads into unadulterated: no additives, no extenders, no price reducing ingredients, no nothing except what was there after distillation or expression. The main concerns with adulterated essential oils include: 1. potential interference of adulterants with components of the natural oil; this may affect synergy and the expected physiological and psychophysiological activities of the oil and 2. Toxicity implications of the adulterants. (Bensouilah and Buck, 2006) Hence adulterated essential oils can reduce the therapeutic benefits of

treatment, increase the likelihood of adverse reactions and potentially introduce toxic compounds into the body.

Now that we know what we are looking for, how in the world do we find it? My goal in this section is to offer up some qualities to look for both in a supplier and in the essential oils you purchase.

Qualities to look for in a supplier:

I personally would want a supplier:

- who is dedicated to supplying essential oils to the aromatherapy practitioner market and educated public.
- that is on the small size and not a large corporation.
- owned by an aromatherapy practitioner or essential oil specialist
- who has relations with his/her distillers, if possible
- who can readily supply a batch-specific MS/GC spec report on each essential oil it sells
- readily able to provide material safety data sheets (MSDS) as needed
- who has a strong unquestioned noncontroversial reputation in the field
- who has preferably been in the field for a number of years and is well known to other aromatherapy practitioners and/or educators

If you have found a supplier that fulfills the above criteria or at least the vast majority, then one can at least begin with the idea that the essential oil you have purchased is of a higher quality than those sold at grocery stores or in the mass market or by a large corporation. If you have been provided with the GC/MS spec sheet that is batch specific you are aware of its chemical profile and potential therapeutic applications and safety precautions.

Qualities to look for in an essential oil

Important items to obtain on each essential oil you purchase include: Common name, Latin name (exact genus and species), Country of origin, Part of plant processed, Type of Extraction (distillation or expression), how it was grown (organic, wild-crafted, traditional) and chemotype (when relevant).

Of equal importance to all the above criteria (including supplier qualities) is your own organoleptic assessment. Organoleptic means perceived by a sense organ. In relation to essential oils I believe we need to utilize all six senses (taste, touch, smell, vision, auditory, and intuition) even though the use of some of them is different than one would expect.

Naturally when it comes to essential oils one would think first of your sense of smell and indeed this is the case. Utilizing your sense of smell may seem rather simple at first glance however the ability to smell (or sense) the 'quality' or 'wholeness' of an essential oil is actually more complex and involved. I shall attempt to outline how to powerfully utilize your sense of smell for determining the quality of essential oil. Each of the steps takes time, patience, consciousness, and willingness.

1. Strengthen your sense of smell

The sense of smell, in my opinion and experience, is like a muscle, the more you use it and become aware of it the stronger it becomes. I would encourage you to first become more familiar and conscious of the aromas (odors, scents) that are present in your everyday life. The smell of your home, your dogs, dinner cooking, your cleaning products, the way your clothes smell, your lover/husband/wife/partner, your children, the individuals you work with, your work environment, the smell of a woman or man with too much perfume or cologne on, the smell of the city, the country, the smell after a days rain, the smell of humidity, the smell of your favorite restaurant or grocery store, the aroma of freshly mowed grass, the smell of gas, the smell of wood burning in a fireplace or woodstove. Spend two to four weeks simply observing, becoming aware of the different aromas which waft under your nose each day.

2. Strengthen your relationship with aromatic plants

Aromatherapists are in some ways at a disadvantage when it comes to relating to the aromatic plants from which essential oils are derived. Unlike herbalists who often spend much of their time touching, smelling, visually observing, and interacting with plants and plant material, aromatherapists simply purchase a bottle of essential oil without ever having come into direct contact with the plant. I believe firmly that this relationship is critical to the full appreciation of each essential oil. Even though the vast majority of us will never go to Madagascar or Costa Rica to smell ylang ylang as it lingers on the tree, there are still many aromatic plants which one can have access to in a variety of settings.

I recommend you spend time with a wide variety of aromatic plants, if and when possible. Obviously the spring and summer months (particularly late spring and summer when the essential oil content is higher) are the best times to explore aromatic plants, either in your own garden or at an arboretum, a garden center, an herb farm, or even in nature. This relationship building with aromatic plants, in my opinion, is the key in being able to appropriately utilize your sense of smell when it comes to the quality and wholeness of essential oils. If it is autumn or winter (as we are now moving into) then you may need to put this off until the spring but nonetheless, it is a vital step towards strengthening and empowering your sense of smell.

Grow what you can. Wherever I have lived I have grown as many aromatic plants as possible, sometimes to use for herbal teas but mostly just to be able to walk out into the garden and pick a leaf or flower (etc) and breath in its aroma. Even when I lived in a small apartment in Boston I was blessed with a fire escape and on it I grew as many aromatic and herbal plants as I could. If you travel, visit gardens when possible. I will always remember visiting the Dupont gardens (Longwood gardens) just outside of Philadelphia. It was there in the conservatory that I had the great fortune of meeting black pepper, a plant I would otherwise never have seen. And although I could not spend time smelling the black pepper (which is dried from the green pepper once it has matured), I at least was able to observe its growth, its leaf structure and the berries.

Strengthening our relationship with aromatic plants strengthens our relationship with the essential oils they give forth. It provides us with a much wider olfactory palate and empowers our sense of smell in better perceiving a quality essential oil from one of inferior quality.

3. Compare and Contrast Essential Oils

Now let's talk about using your sense of smell with actual essential oils. I remember years ago while studying esthetics my instructor said something to the affect of: In order for you to truly understand the various degrees of oily or dry or dehydrated skin you must come into contact with as many individuals as possible. Once you have seen slightly oily skin and then very oily skin and also very dry skin and degrees thereof, then and only then will you have an appreciation and understanding of each of the skin types. And the same goes with massage, only after massaging numerous clients will you begin to be able to

truly feel differences in muscle tone, range of motion, muscle tension, etc. etc. This concept holds true for essential oils. To be able to understand and interpret the differences between qualities of essential oils one must spend time with and be exposed to different qualities. Remember too, that even within the category of high quality authentic and genuine essential oils there will be subtle differences and nuances in the essential oils.

If you have never smelled an essential oil of superior quality (in every sense) or an inferior essential oil, how are you truly able to distinguish qualities? To know a superior quality one must have access to companies which exemplify this quality. I would highly recommend purchasing essential oils from companies in Europe (such as Florihana or Fragrant Earth, etc) and also from reputable suppliers here in the United States and Canada (of which there are many great companies). Purchase at least 2-4 essential oils from a few different companies, perhaps even the same essential oils to compare.

I recommend you spend time with the essential oils you get from these companies as well as others you may already have, really take in the fullness of the essential oils. When you 'spend time' with these oils this is what I personally would do:

I would choose one essential oil to work with for a day or week. At least once a day I would open the lid of the essential oil and smell. I recommend closing your eyes while doing this. It helps to shut off the outside world so you are able to be fully present with the oil in hand. Breathe in through the nose, possibly even take several sniffs, and listen to the oil. Listen to the oil? Yes, listen. I believe when you take the time to really sit and smell an essential oil you can begin to 'hear' it. A natural aroma from an essential oil 'sounds' like an orchestra with crescendos and decrescendos, increasing its aroma here, quieting down there, but rolling like an ocean or river, not stopping but moving along, expanding, growing and evolving. I differentiate this with a low quality oil which can attack or assault your senses, like the sound of a loud bass beat in the car next to you. Low quality essential oils often hit you with a strong aroma and then die off.

This listening can also bring in your intuitive observations, the essential oil may 'speak to you' on some level. Essential oils are powerful and quite capable of 'communication'. Bring into your experience your aromatic palate from the

memories of smelling the plant material. Pay attention and write down your observations of different companies essential oils.

NOTE: In 2001, Bob Harris in the editorial of the *International Journal of Aromatherapy* commented that he has met therapists and educators who are not overtly worried about adulterated oils as long as they 'smell good'. I hope that in offering some ideas on how to strengthen your sense of smell and your relationship with the essential oils that you begin to know and understand that we are not looking for oils that simply 'smell good' but rather to reawaken our sense of smell to the fullness of an essential oil aroma, which may or may not 'smell good' on first 'smell'.

For now, to complete this rather lengthy article on the quality of essential oils: Appreciate that your sense of smell needs practice to be able to perceive/experience the quality of an essential oil. Appreciate that suppliers need to be able to provide you with necessary information not only on the essential oil but also on their company and their commitment to quality. Be willing to explore different companies regardless of their marketing material to begin to appreciate the differences inherent within them and to expand a much needed olfactory palate.

ABOUT JADE SHUTES:

Jade Shutes holds a B.A. from Simmons College (Boston, MA), a Diploma in Holistic Aromatherapy, Holistic Massage, Anatomy and Physiology, and Reflexology from the Raworth College of Natural Medicine in Dorking, England, and a Diploma in Aromatherapy from the International Therapist Examining board (ITEC). She has studied with Jan Kusmirek of Fragrant Studies and has completed Part One of the Purdue University Advanced Studies of Essential Oils. Jade has taught at such facilities as Bastyr University, San Diego Hospice, Duke University Continuing Education, Elizabeth Grady School of Esthetics, Seven Arrows Herb Farm and throughout the United States and Canada.

Jade is the author of "Aromatherapy for Bodyworkers", a textbook devoted to the integration of aromatherapy with bodywork and massage therapy. She is the owner and Director of Education for the East-West School for Herbal and Aromatic Studies. She is passionate about aromatherapy and its ability to transform our relationship to health, well-being, aromatic plants and the natural world. For further information please visit her website at: www.theida.com

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