

LIVING ENERGY: USING THERAPEUTIC GRADE ESSENTIAL OILS IN THE TREATMENT OF AUTISM

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BACKGROUND

Essential oils have been used therapeutically for thousands of years. In fact, many believe they were the world's first medicine. My own experience with the therapeutic uses of essential oils began a little over a decade ago. At that time, a patient I was treating had what was called by D. Gary Young, the dynamic and sometimes controversial founder of the essential oil movement in the United States, an "awakening." I will have more to say about that encounter shortly.

As a physician, integrative medicine practitioner, and herbalist, I was vaguely familiar with essential oils. Having studied with the late herbalist Dr. John Christopher, I learned that essential oils were volatile, aromatic compounds usually distilled or extracted from herbs or plants. I knew that essential oils had strong aromas, and they sometimes could be used to confuse the body's pain mechanism, relieving headaches and relaxing tight muscles. In medical school, I learned about the use of smell to stimulate the brain in cases of traumatic brain injury or coma.

There were dozens of case reports describing how certain smells, such as cinnamon or lemon, had triggered comatose patients to awaken from their coma. Although doctors still did not really understand the effect of smell on comatose patients, the use of inhaled scents had become a standard therapeutic intervention in brain injury hospitals.

In my early years of practice, I toyed with essential oils, primarily utilizing the therapeutic benefits of their aroma. Drawing on what I had learned in medical school, I used the scents of mint, cinnamon, lavender, and other oils to stimulate the olfactory sense in children who had suffered from traumatic brain injury. However, I stopped the practice when one of my patients presented to the office with what appeared to be a second-degree burn with redness and blistering. The patient's mother had purchased an essential oil of lavender at the local health food store and had dowsed her child's neck and back with the oil, thinking to augment the office treatment. The fact that the child sustained a burn from what was labeled an "essential oil of lavender" is quite

ironic since there are a number of case reports documenting the effectiveness of lavender essential oil in the treatment of severe burns. I will address this issue a little later. Concerned about further burns and possible allergic reactions, I followed the Hippocratic admonition to "first do no harm" and eliminated essential oils from my practice.

My next experience with essential oils came a year or so later when an adult patient came in for a routine osteopathic treatment and declared that she had discovered an amazing cure for a lifetime of depression and anxiety. She reported that after using a combination of essential oils obtained from a network marketing company, she had weaned herself from pharmaceutical drugs and was cured. Although the woman was enthusiastic and did not appear depressed, her claims seemed less than plausible to me. I instead attributed her extreme enthusiasm to the manic phase of a bipolar personality disorder. My leering grew when the woman wanted to sign me up to share the dream through the vehicle of network marketing. However, I had to admit that

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her brand of essential oils had a different feeling and scent than some of the others I had experienced. They also had intriguing names such as Valor and Joy. Nonetheless, I remained unconvinced at that time. (When I recently spoke with this patient, however, she reported that she continues to be free of depression and uses an essential oil regimen daily.)

Another year or so later, an older student whose experience I respected and valued began volunteering in our practice. She had recently finished all the prerequisites for medical school, intending to pursue a career in osteopathic medicine. At the time, she had already worked in the medical field as a holistic health practitioner for more than 10 years. I considered her a knowledgeable and accomplished healer and a dedicated student. One day during one of our discussions, she told me about her experiences with essential oils. Several of her patients with chronic illnesses such as fibromyalgia, depression, and mental disorders had made remarkable improvements after adding essential oils to their treatment regimens. I flashed back to the patient who had credited essential oils with healing her depression.

The student also explained that many of the products labeled as essential oils in this country are actually adulterated, chemical look-alikes. This fact clarified why an oil purported to be successful for use with burns resulted in a burn to the patient mentioned earlier. The student explained that contamination and adulteration were well-known problems with lavender oil especially. For example, the largest manufacturer of personal care products in the United States uses more lavender oil per year in its products than there are lavender plants on the planet. Obviously, there must be something more in the common ingredient "lavender oil" than just the essential oil derived from the lavender plant (*Lavandula angustifolia*).

In fact, most of what is labeled as natural lavender oil in the US does not contain a single drop of pure lavender oil. Instead, most "lavender oil" is actually chemically altered lavandin (*Lavandula x intermedia*), lavender oil's cheaper hybrid cousin. Lavandin is known to contain a high concentration of camphor, which is likely the cause of the burns frequently reported in connection with lavandin oil use. Lavandin is imported primarily from Russia,

China, and Tasmania and typically is laden with petrochemical-based insecticides and pesticides. In addition, because lavandin on its own has a sour smell, synthetic linalyl acetate is added to make the oil smell sweeter. The mixture is then cut with colorless and odorless petrochemical solvents such as phthalates and propylene glycol. These synthetic lavender oils can be found in many products, including shampoos, deodorants, and even toothpastes.

Synthetic linalyl acetate, phthalates, and the petrochemicals found in pesticides all serve as endocrine disruptors. There have been several case reports of adulterated lavender-oil-containing hair gels and shampoos causing abnormal breast development in prepubertal boys. Some research suggests, moreover, that endocrine disruptors may play an inhibitory role in the elimination of heavy metals such as mercury (which is in and of itself an endocrine disruptor). Products containing synthetic lavender oil thus should be of particular concern to those involved with autism.

In the European Union, essential oil producers adhere to guidelines set out by the French Association for Standardization (*Association française de normalisation* or AFNOR) and the International Organization for Standardization (ISO). In the US, however, there is no regulation of essential oils. Therefore, use of therapeutic grade essential oils is crucial.



After the student volunteer and I spoke about essential oils, she began bringing one or two of the oils with her each time she volunteered and later brought her entire kit of about 150 different oils. We began diffusing oils in our treatment room, applied them topically, or simply had children smell them before or after their treatments. We noticed that certain oils seemed to enhance the osteopathic treatment, while others seemed to open up the child's energy pathways, and still others seemed to constrict or focus the body's energy on certain areas. We experimented with using recommendations

from available texts to select oils related to each child's inherent need. We also experimented with having the child select the oil they wanted from my volunteer's full kit. Interestingly, the oil that the child randomly or intuitively selected often was either the exact oil indicated by our books for their particular complaints or the exact opposite of the oil indicated for their complaints.

TURNING POINT: AN AWAKENING

It was by using this random selection method that I began to understand the true power inherent in essential oils. A 9-year-old boy came in one Saturday for a sick visit, presenting with a low-grade fever and a mild cough. Although I had never seen him before, he had been my partner's patient for several years. I examined him and did some osteopathic manipulation to help with his cold symptoms. The child remained quiet throughout the treatment. Toward the end of the treatment, I asked him to select one of the essential oils from the kit. The child quietly looked at several of the oils and selected a bottle labeled rose (*Rosa damascena*), which happened to be among the rarest, most expensive, and most difficult-to-obtain oils in the kit. The child opened the bottle and sprinkled a few drops of the oil on his hands, sniffed it, and took several deep, exaggerated breaths. He then said that the oil made him feel much better, adding that he liked it and wanted more. I sprinkled a few more drops on his hand. I then sent the boy on his way, giving his parents some instructions and telling them to contact the office if he did not get better.

Although I had noticed a subtle but distinguishable change in the boy's countenance after using the oil, the change appeared to go unnoticed by the parents. Whereas the child seemed to like the essential oil treatment, the parents seemed surprised by it and left saying very little. Because essential oils were not as popular then as they are today, I assumed that they found the essential oil component of the treatment unusual. My partner (this family's usual provider) was a homeopath, and her patients were, for the most part, unfamiliar with herbs and essential oils. I therefore expected to hear complaints about my use of essential oils from my partner after the family's follow-up visit.

First thing Monday morning, however, my office told me that the parents of the Saturday patient had called with questions about some kind of oil therapy. The office staff had no idea what the parents were talking about since essential oils were not yet a routine part of my treatment approach. When I reluctantly returned the call, expecting to

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hear complaints, the mother had a long string of questions. What was the oil treatment I used? What did the oil do? How did it work? Where could she get it? I was surprised and, furthermore, did not have answers for most of her questions. I had no idea where the oils were from or how to purchase them, and I had only an elementary understanding of how they worked or if they worked at all. When I asked the mother why she wanted this information, she took a deep breath and told me that her son had a type of autism. Before using the oils in my office, he had not spoken in over five years.

I, like the mother, was stunned. Having no immediate medical explanation for the response apparently exhibited by this child, I did an Internet search for medical research, case reports, or experiences with essential oils. I pretty much came up empty-handed, finding just one distributor's website that mentioned scientific studies on the brand of essential oils contained in my volunteer's kit. However, the website provided no information that would account for the dramatic response seen in our patient.

When I called the telephone number listed on the website, I was referred to the parent company that manufactured the oils. Several hours later, the company's president was on the phone explaining that essential oils were powerful healing tools. He said that using essential oils to heal was not so much about the aromas they produced or the plants they originated from but about the way that their energy signature interacts with the body. He explained that the energy signature of essential oils is produced by molecules found in the plant oil, including specific molecules such as terpenes and sesquiterpenes, which produce frequencies of energy that raise the vibration of the body. He described the body as a living energy field that, in some individuals, becomes damaged or "fractured." When the body is presented with the appropriate energy field—in the form of an essential oil—the fracture seals and the body's vibration increases. This executive reported that he had worked with technology (developed at Eastern Washington University in Cheney, Washington) that attempted to measure this energy field and demonstrate how application of essential oils changed the field within minutes.

In the case of the boy seen in my office, clearly something in the energy signature of the oil exactly matched his energy deficiency signature. In essence, the oil had sealed the fracture in his energy field. The company president did not find this surprising, because he had imported the *Rosa damascena* oil from a region in Turkey where the energy



frequency was the highest of any oil the company had ever tested. Interestingly, only the oil from this particular region had the high energy signature. He emphasized that it was the energy frequencies produced by the molecules distilled from plants that had such unique qualities.

I learned that while chemists have been able to duplicate plant aromas, it is impossible to duplicate the molecules found exclusively in the plants' essential oils. Moreover, if the oils are not distilled long enough (or for too long), if too much pressure is used, or if they are heated improperly, the special healing molecules in the oils are lost. According to this executive, most of the oils available commercially are mixed with synthetic chemicals or solvents; these adulterations greatly damage the molecules, making them useless for therapeutic purposes. Truly therapeutic grade essential oils must be carefully distilled under low heat and pressure from organically grown plants. By allowing the healing molecules to be preserved, the oils retain what this man called "living energy." The only way to know if the oils have these healing molecules, however, is to subject samples to gas chromatography and mass spectrometry analysis, which was standard practice for this company. This company followed and exceeded the standards set by AFNOR.

REDISCOVERING ESSENTIAL OILS

As I learned more, I found that, in fact, thousands of studies have been conducted showing the efficacy of essential oils in treating everything from depression

to the most virulent strains of methicillin-resistant *Staphylococcus aureus* (MRSA). I also learned about the work of D. Gary Young, a self-taught naturopath, botanist, archeologist, agricultural expert, inventor, farmer, and healer. Called a fraud and "snake oil salesman" by some, Young's work has been nevertheless endorsed by Dr. Terry Friedman, one of the founders of the American Holistic Medical Association, and by Dr. Ronald Lawrence, professor at the University of California, Los Angeles (UCLA). Both are well-known and respected experts in complementary and alternative medicine.

Young pioneered the medical use of essential oils in the United States and changed their use around the world after sustaining a crippling and near fatal logging accident in the Canadian wilderness in the early 1970s at the age of 24. Crediting the recovery of his ability to walk to the use of essential oils, Young set out on a course of self-directed study across six continents to learn about and understand the power inherent in the oils. In Egypt, he studied frankincense with Dr. Radwan Farag, biochemistry expert at Cairo University, and went on to learn about essential oil manufacture and distillation in Israel, Turkey, and Oman. In France in the early 1990s, Young rediscovered a little known and unique system of French medicine, *la médecine aromatique*, in which French medical doctors prescribed oral administration of essential oils to treat various medical conditions. While in France, Young also studied with Dr. Jean Lapraz and Dr. Daniel Penoel, recognized authorities of aromatic medicine.

Young subsequently brought many of these experts to the United States to conduct seminars and conferences, raising awareness of the value of essential oils as a healing modality. More importantly, he pioneered a unique form of holistic medical therapy that combines principles and techniques from French aromatic medicine, German and British aromatherapy, Tibetan and Chinese medicine, Native American lore, and Western herbology. This system uses essential oils to treat (1) *the mind and emotions* (by stimulating brain pathways that recall and release negative emotional patterns); (2) *the body* (by ingestion, massage, and inhalation of

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the oils); and (3) *disrupted energy patterns* in the body (by finding oils with energy patterns that match the deficiencies found in the patient).

ESSENTIAL OILS AS CARRIER OILS

Essential oils have the unique ability to diffuse across cell membranes; therefore, they can act as carriers for other substances such as herbs or nutrients. In my own practice, I first explored essential oil supplementation around 2003. I noticed that when added to nutraceuticals (foods or food products that provide health or medical benefits), the oils greatly enhanced the effect of individual herbs or nutrients. One supplement I prescribed contained *Lycium barbarum*, reishi, zinc, melatonin, and orange essential oil, among other ingredients. The orange essential oil is composed of over 90% D-limonene (a component of the oil extracted from citrus rind). D-limonene, a powerful solvent of petrochemicals that is also known for its anti-tumor effects and uses in treating gastroesophageal reflux, makes an excellent carrier for nutrients.

Many children with autism, as well as those suffering from symptoms of attention-deficit/hyperactivity disorder (ADHD), have been found to have low melatonin levels, which corresponds with sleep disturbances and hyperexcitability. In the past, when I had tried using melatonin alone, many patients showed no effect from supplementation even after baseline testing identified low initial melatonin levels. However, when I began to use the melatonin supplement with the orange essential oil carrier, I noticed that children who had not previously responded to melatonin therapy began to respond. Parents of children with ADHD reported that not only did their children's sleep improve, but their ADHD symptoms also improved and in some cases disappeared. Moreover, when the supplement was given for a period of time (6-12 months), I frequently could wean the child off it quite easily; the child's sleep patterns and melatonin levels remained in the normal ranges and the symptoms did not reappear.

Although these experiences helped me realize that supplements enhanced with essential oils greatly benefited my patients, I did not fully realize how significant the benefits were until 2005 when the enhanced melatonin supplement was temporarily unavailable. Our office received

hundreds of calls daily for about six weeks until the supplement again became available. When I spoke to parents, many of whom had children with autism, each testified to the powerful and beneficial effect they had noticed since their child began using the supplement.

ESSENTIAL OILS AND DETOXIFICATION

Essential oil enhanced supplementation is powerful. However, direct ingestion of essential oils themselves can have an even more potent effect. When ingested, the molecules in essential oils can have various effects. Their lipophilic nature allows them to diffuse throughout the bloodstream, easily cross cell membranes, and cross the blood-brain barrier. The various molecules in the oils may stimulate antibody production, increase production of neurotransmitters, and interact with hormones and enzymes.

In 2003, D. Gary Young reported using an essential oil combination of *Helichrysum*, celery seed oil, and *Ledum* to detoxify and repair liver damage. Both *Helichrysum* oil and celery seed oil are on the generally recognized as safe (GRAS) list, and *Ledum* has been used safely for centuries in the form of Labrador tea. Subsequently, clinicians at Young's US and Ecuador clinics noticed that this combination could also be powerful and effective in chelating mercury from the body. Many essential oils have the ability to act as natural chelators, binding heavy metals and allowing them to be harmlessly excreted from the body. In addition, very few available substances other than essential oils are capable of neutralizing petrochemical-based toxins.



CASE STUDY

To understand how essential oils are used in practice, it is worth describing one of my cases at some length.

AF was a three-year-old white male who presented with a significant medical history of developmental delay, loss of language, and elevated serum mercury levels. The child had received a formal diagnosis of moderate-to-severe autism at the age of 2 years and 9 months at the local children's hospital. He spoke at most 1-2 words (infrequently and inconsistently), was frequently lethargic, was sensitive to certain sound frequencies, and had difficulty in motor planning (such as catching or throwing a ball). He also had a history of birth trauma, with an unsuccessful occiput posterior (sunny side up) delivery that had resulted in an emergency Caesarean section and marked head molding and plagiocephaly.

The boy had experienced fevers over 104 and severe flu-like symptoms on three separate occasions after being vaccinated. His pediatrician dismissed these reactions as "unexplained viruses" that were unrelated to the vaccines. The pediatrician had run serum mercury levels to appease what he termed the mother's "irrational and hypervigilant concern" over possible mercury exposure secondary to immunization and its connection to the child's autism diagnosis. Because serum blood levels are the least likely tissue to display elevated levels of mercury, the pediatrician was at a loss when a series of blood tests showed elevated blood levels of mercury. The child was referred to a toxicologist who told the parents that there was no relationship between autism and mercury. Suggesting that the child's mercury levels were high because he likely consumed too much fish, he recommended that they halt fish consumption. However, the child did not eat fish in any form.

Having heard that some physicians were reporting success with children with mercury toxicity via use of DMSA (a standard sulfur-based chelating drug approved by the FDA for treatment of lead toxicity), the parents consulted with a physician conversant in this protocol. During the first two attempts of DMSA use, however, the child became extremely ill with high fevers, flu-like symptoms, and worsening of behavior. After the second chelation attempt, the parents discontinued treatment and came to my office.*

At the time of consultation with my office, the child was eating a gluten-free/casein-free (GF/CF)

Figure 3.

Heavy metal screen one year after initiation of essential oil therapy, showing an increase in excretion of neurotoxic aluminum

| POTENTIALLY TOXIC ELEMENTS | | | | |
|----------------------------|-------------|-----------------|--------------------------------------|------|
| TOXIC ELEMENTS | RESULT µg/g | REFERENCE RANGE | PERCENTILE | |
| | | | 68th | 95th |
| Aluminium | 26 | < 8.0 | [Bar extending past 95th percentile] | |
| Antimony | 0.042 | < 0.066 | [Bar within 68th percentile] | |
| Arsenic | 0.082 | < 0.080 | [Bar within 68th percentile] | |
| Beryllium | < 0.01 | < 0.020 | [Bar within 68th percentile] | |
| Bismuth | 0.25 | < 0.13 | [Bar within 68th percentile] | |
| Cadmium | 0.082 | < 0.15 | [Bar within 68th percentile] | |
| Lead | 0.45 | < 1.0 | [Bar within 68th percentile] | |
| Mercury | 0.08 | < 0.40 | [Bar within 68th percentile] | |
| Platinum | < 0.003 | < 0.005 | [Bar within 68th percentile] | |
| Thallium | < 0.001 | < 0.010 | [Bar within 68th percentile] | |
| Thorium | < 0.001 | < 0.005 | [Bar within 68th percentile] | |
| Uranium | 0.18 | < 0.060 | [Bar within 68th percentile] | |
| Nickel | 0.07 | < 0.40 | [Bar within 68th percentile] | |
| Silver | 0.15 | < 0.20 | [Bar within 68th percentile] | |
| Tin | 0.22 | < 0.30 | [Bar within 68th percentile] | |
| Titanium | 0.83 | < 1.0 | [Bar within 68th percentile] | |
| Total Toxic Representation | | | [Bar within 68th percentile] | |

Figure 4.

Toxic heavy metal screen (urine) at age 5 after two years of essential oil therapy

| POTENTIALLY TOXIC METALS | | | | | |
|--------------------------|-------------------|-----------------|------------------------|---------------|--|
| METALS | RESULT µg/g CREAT | REFERENCE RANGE | WITHIN REFERENCE RANGE | | |
| | | | ELEVATED | VERY ELEVATED | |
| Aluminium | < dl | < 100 | | | |
| Antimony | < dl | < 2 | | | |
| Arsenic | 24 | < 200 | [Bar] | | |
| Beryllium | < dl | < 0.6 | | | |
| Bismuth | < dl | < 20 | | | |
| Cadmium | 0.3 | < 3 | [Bar] | | |
| Lead | < dl | < 5 | | | |
| Mercury | < dl | < 5 | | | |
| Nickel | 0.4 | < 20 | [Bar] | | |
| Platinum | < dl | < 1 | | | |
| Thallium | < dl | < 1.1 | | | |
| Thorium | < dl | < 1 | | | |
| Tin | 0.3 | < 20 | [Bar] | | |
| Tungsten | 0.2 | < 2 | [Bar] | | |
| Uranium | < dl | < 0.3 | | | |

trauma and neglect. To explain this, researchers have theorized that amygdala volume increases as a protective mechanism following trauma. Increased amygdala size has also been observed in children with autism in numerous studies, including a study at the University of North Carolina that found that children with autism had a 13% increase in amygdala size compared with controls.

The olfactory sense is the only one of the five

senses that has a direct neural pathway to the limbic system. Research done by New York University confirms that the sense of smell is one of the few avenues available to directly stimulate the amygdala and release deep emotional trauma. Stimulating the olfactory pathways with an essential oil application is believed to open up the neural pathways of emotion. By placing the body in the original position of injury using osteopathic techniques

and presenting the amygdala with specific novel fragrances, the brain is able to process and release old trauma.

During osteopathic treatment with the 3-year-old boy, I perceived a sense of deep-seated fear and loss as well as a sense that life was a struggle and that the boy was apprehensive about interacting with the outside world. I viewed this as a form of the “death urge” described in the work of Leonard Orr (rebirthing-breathwork practitioner) and French obstetrician Frederick Leboyer (author of *Birth Without Violence*). I speculated that deep-seated apprehension triggered by his birth difficulties and subsequent C-section was preventing the child from expressing his true nature and effectively interacting with his surroundings.

To address this trauma, I therefore applied essential oils topically to reflex pathways that are involved in emotional trauma. In addition, I placed therapeutic grade essential oils in a glass apparatus attached to a standard nebulizer (as used in asthma treatment) and diffused the oils during the osteopathic treatments. Thirdly, I instructed the parents to apply specific essential oils to the child at home to reinforce the office treatment. Applying essential oils in the home is a nonintrusive way of helping the family release their own accumulated trauma. In such cases, I generally assume that where a child has experienced trauma, the parents also have experienced trauma and will benefit from essential oil treatment (for example, the trauma of receiving an autism diagnosis). If there are siblings in the home, I additionally recommend that the parents apply oils to the siblings.

By the time my patient was 5 years old and had undergone 2 years of essential oil based therapy, he had made significant progress (see Figure 4). He had regained a vocabulary close to his peer group and was mainstreamed with an aide into a regular classroom. At age 6, he was re-evaluated, and no signs of autism were observed. At the age of 7, he entered a new school. The parents purposely withheld the records from the prior school, and the teachers had no knowledge of his history of autism. He performed at grade level and, by fifth grade, was on the honor roll. He excelled in both academics and sports and received a number of taekwondo awards. According to his teachers, he was one of the most well-liked children in his class and exhibited unusual and extraordinary empathy with his peers, especially socially slower peers and those with disabilities.

I recently spoke with the child as part of a yearly follow-up visit. He had no memory of his early medical diagnosis or the intensive aromatic therapy he had received. Although the parents have discontinued medical supplementation, the mother reported that they continue to use some essential oils because they are calming to the family and help maintain immunity in the winter.

In my practice, I have found pure, therapeutic grade essential oils to be profoundly beneficial in facilitating the healing process. Because of the amygdala and its response to olfactory stimulation, this is especially true in autism and brain-based disorders.

DISCUSSION

There are literally hundreds of essential oils. Although the exact mechanism of action of essential oils has not yet been fully explained, more and more research is being conducted into their powerful effects. In my practice, I have found pure, therapeutic grade essential oils to be profoundly beneficial in facilitating the healing process. Because of the amygdala and its response to olfactory stimulation, this is especially true in autism and brain-based disorders.

People often ask for a cookbook or protocol for various conditions. However, because essential oils are an energetic medicine, each individual reacts differently to any given oil. Selection of appropriate oils is both an art and a science and must also take into account an intimate and specific knowledge of the individual being treated.

Recognizing that the origins of essential oils are ancient, my method of application and use (based extensively on the work of D. Gary Young) is unique. This approach uses the energetic

frequency of therapeutic grade essential oils to address underlying energetic disturbances in the body, brain, and emotions. This is accomplished through topical application, inhalation, and ingestion, supported by proper nutrition, removal of toxins, and attention to matching the appropriate oil with the appropriate individual. Although no one healing system has all the answers, essential oils can be a powerful and healing modality in helping children to reach their optimum potential.

Although I have chosen not to provide specific protocols in light of the need to match oils to individual situations and needs, I describe five oils that I have found enormously useful for my patients, particularly those with autism. Where such information is available, I outline the scientific and theoretical rationale for their use.

SANDALWOOD

Sandalwood has a long history of use and is often one of the first oils I use with an autistic child. It has a pleasant and exotic aroma that is unparalleled. Although products labeled as sandalwood can sometimes be found in perfume shops or health food stores, its rarity almost guarantees that these products are not pure plant oil. The pure essential oil has a starkly different and immediately recognizable aroma due to its high sesquiterpene levels.

Research at the University of Vienna has shown that inhalation of oils such as sandalwood that are high in sesquiterpenes increases brain oxygenation by as much as 28 percent, resulting in a calm but alert state. Sandalwood has been found to especially interact with the amygdala and limbic system, which can be seen in SPECT (single photon emission computed tomography) scans. Other research has shown that, when the user is awake, sandalwood produces greater focus and alertness; when the user is sleeping, however, the oil promotes deeper rapid eye movement (REM) sleep, especially in individuals who are sleep-



disturbed. In Ayurvedic medicine (the traditional medicine of India), sandalwood is thought to open the energy pathways at the base of the spine to release deep or cellular memory.

FRANKINCENSE

Like sandalwood, frankincense has a long history of use. The ancient Egyptians called it "holy anointing oil" and used frankincense to anoint the heads of newborn royalty. (It is likely that the oil's antibacterial effects prevented the royal infants from developing infections caused by head abrasions from difficult births.) Mentioned in the Judeo-Christian Bible, frankincense has been used by religious groups to stimulate focus and religious contemplation. In Eastern medicine, frankincense is known for its profound impact on the spirit.

Practitioners report that frankincense helps users to feel stable, grounded, and secure, both physically and emotionally, making it a good choice in autism. Like sandalwood, frankincense stimulates the amygdala and, because of its high sesquiterpene



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levels, increases brain oxygenation. Researchers have discovered a molecule in frankincense called incensole acetate (IA) which is liberated either by burning the resin or diffusing extremely pure essential oil. Researchers at Cairo University have found that the IA in frankincense stimulates a previously unknown neural pathway responsible for decreases in anxiety, which results in mood elevation and a feeling of well-being. Follow-up research on IA has found that it is also neuroprotective and stimulates dendrite growth. In animal models, mice subjected to traumatic brain injury who inhaled IA molecules displayed neurobehavioral and cognitive improvements.

VETIVER

Vetiver has a pungent, earthy aroma described by some children as the smell of an old tree. Traditionally, vetiver has been used to combat stress and feelings of sadness, and to release emotional trauma and shock. Vetiver is an oil to consider because of its grounding properties and high sesquiterpene levels.

In 2002, Dr. Terry Friedman completed a 2-year study comparing vetiver essential oil with lavender and cedarwood oils. Of these three oils, vetiver was associated with the greatest decrease in ADHD symptoms. The study evaluated participants with serial, real-time electroencephalographic (EEG) studies as well as the TOVA (Test of Variables of Attention), a standardized computer-based screening tool for ADHD. Dr. Friedman noted that whereas ADHD children typically exhibit marked slowing of brain waves in the prefrontal cortex (an area responsible for the brain's executive functions), this slowing halted, appearing closer to a normal profile, after administration of vetiver essential oil through inhalation, almost



as if this part of the brain had been awakened. The post-treatment TOVA values also showed a marked improvement in the treatment group.

EUCALYPTUS BLUE

(*Eucalyptol natriol azul* spp. *Eucalyptus bicostata*)

Although previously thought to grow only in Australia, this plant species was newly discovered deep in the Andes Mountains near Guayaquil, Ecuador, by D. Gary Young. The Ecuadorian plant is used by natives to heal wounds and various other conditions. This oil has one of the strongest recognizable aromas of any essential oil. Even one small drop can be recognized from a great distance. This oil has a strong oxygenation capacity and frequently prompts those exposed to the oil to take deeper and more sustained breaths. It has an opening or expansive effect that is both calming and stimulating to the emotions.



PALO SANTO

Palo santo oil is in the same family as frankincense. Like frankincense, palo santo is known as a "spiritual" essential oil. South American shamans and native healers use it to cleanse negative energies from the surroundings and believe that applying the oil to the skin creates a protective covering. This oil, too, has a very distinctive aroma. Although there has been little research on palo santo, it likely has properties similar to vetiver and frankincense. I have seen palo santo be very powerful in facilitating the release of trapped emotions.



*Editor's note: Many children, including some who have significantly improved or recovered, have benefited from this form of treatment. Please discuss your child's unique physiology and appropriate options with your child's treating physician.

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