



SAVING PETS' LIVES, 24 HOURS A DAY, 7 DAYS A WEEK

PET POISON HELPLINE



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Sniffing Out the Truth About Essential Oils and Pets

February 5th, 2019

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1



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What is Pet Poison Helpline?

- 24/7 animal poison control center
- Veterinary & human expertise
 - 20+ DVMs, 75+ CVTs
 - DABVT, DABT
 - DACVECC
 - DACVIM
 - 10 PharmDs
 - 2 MDs
- Case fee of \$59 includes
 - Unlimited consultation
 - Fax or email of case report
- Educational center
 - Free webinars (archived)
 - Tox tools
 - Wheel of Vomit
 - Pot of Poisons (toxic plants)
 - Textbook
 - iPhone app
 - Newsletters for vet professionals
 - Free resources for clinics
 - Videos
 - Electronic material
 - Clings

Email us for info!



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2



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Pet Poison Helpline® and Nationwide®



ONE NATION. MANY VOICES.

3

Nationwide® & PET POISON HELPLINE® working together

- Shared mission in highlighting the importance of preparing for accidents and poisonings in small animals
- Addressing the cost of veterinary care Nationwide® covers the \$59 Pet Poison Helpline® fee when an insured pet is brought in to your hospital for care
- Enabling best medicine
Pet owners with Nationwide® spend twice as much on their pets than those without pet insurance



4

Pet Insurance

With more than 35 years of experience protecting pets, there's nothing we haven't seen...

Accidents & injuries - Poisonings - Sprains - ACL ruptures	Chronic illnesses - Allergies - Arthritis - Skin conditions	Procedures - Surgeries - Endoscopies - Chemotherapy
Common illnesses - Ear infections - Vomiting - Diarrhea	Hereditary conditions - Hip dysplasia - Eye disorders - Blood disorders	Holistic & alternative - Acupuncture - Chiropractic - Laser therapy
Serious illnesses - Cancer - Heart disease - Diabetes	Testing & diagnostics - X-rays, MRIs, CT scans - Ultrasounds - Blood tests	Wellness - Vaccinations - Flea/heartworm - Spay/neuter

5

Available plans

whole pet™ with wellness 90% back on veterinary bills - Accidents & illnesses - Hereditary & congenital - Cancer - Use any vet - Specialty & CR coverage included - Dental diseases - Eye, musculoskeletal & blood disorders - Behavioral treatments - Preventative diets & supplements - Alternative & holistic treatments - Wellness \$250 annual deductible unlimited annual maximum \$67.70/mo.* View coverage details	major medical™ not covered for accidents, illnesses & hereditary conditions - Ear, dental, allergies - Accidents & illnesses - Limited hereditary coverage - Cancer - Use any vet - Specialty & CR coverage included \$250 annual deductible unlimited annual maximum \$34.25/mo.* View coverage details	wellness basic™ Coverage for shots, flea, heartworm & more - Diets, shots, flea, testing - No deductible - Use any vet ☐ Add CR, more coverage \$400 annual maximum \$17.75/mo.* View coverage details
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6




Speaker Introduction



**Charlotte Flint,
DVM, DABT**

*Senior Consulting Veterinarian,
Clinical Toxicology*

7




What are essential oils?

- Concentrated volatile oils distilled or extracted from plants that give plants their characteristic fragrance
 - Developed in the middle ages
 - >3000 essential oils are currently known
 - ~300 are commonly used
 - Fixed oils are non-volatile oils such as olive oil or coconut oil



8








We Think of These As Essential Oils...

9



10

Essential Oil Characteristics

- Small, lipophilic molecules
- Readily absorbed systemically across skin, lungs, and GIT
 - EO components have been found in blood, organs, brain with inhalation, oral, and dermal use
- Contain mixed hydrocarbons, usually terpenes
- Contain 20-200 different chemical components in varying concentrations, which can vary among plants

11

Essential Oil Kinetics

- Most are metabolized by the liver via glucuronidation
 - Terpenes undergo metabolism via cytochrome P450 enzymes
 - Often enterohepatic recirculation
- Elimination
 - Mostly via lungs and kidneys, minor fecal elimination

12



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Essential Oil Potential Beneficial Uses

- Antibacterial
- Antiviral
- Antifungal
- Insecticidal or repellant to insects
- Antispasmodic
- Antineoplastic
- Analgesic
- Sedative
- Anxiolytic
- Anti-inflammatory
- Antioxidant
- Embalment
- Preservation of foods

13



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Essential Oils and Safety

- Essential oils are natural but are not always safe
- Essential oils are also not always dangerous






14



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Assessing Toxicity of Essential Oils

- Exposure details
- Product and ingredient issues
- Individual and species sensitivities
- Other factors

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Exposure Details

- Higher risk with concentrated oils vs dilute or low concentration oils/products
- Route of exposure
 - Oral > dermal > inhalation
 - Often a combination of routes
- Dose
- Acute vs chronic use



16

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Product and Ingredient Issues

- No regulatory control for quality and safety
 - EO based flea products are not EPA regulated
 - FDA generally considers EOs as cosmetics
 - Some EO home products (air fresheners, laundry products, etc.) managed by Consumer Product Safety Commission
- Specific ingredients, concentrations, safety may be unknown

17

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Product and Ingredient Issues

- Plants and their extracts are not standardized
 - Variability in cultivars and chemotypes, part of plant used, growth conditions, geography, maturity, time when harvested
 - Which is the active chemical component? Which components are beneficial, which are harmful? Are they synergistic?
- Potential for plant name confusion, especially if using common or traditional names

18


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Product and Ingredient Issues

- Potential for adulteration
 - Other plants, herbicides, pesticides
 - Other oils or carriers may be added but not declared
- Wild and novel plants
 - Various cultivars and chemotypes of wild plants
 - Higher risk of adulteration with other plants
 - Some new novel plants have been found to be closely related to other known toxic plants and have caused similar adverse effects

19


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Species and Individual Sensitivities

- Cats
 - Glucuronidation deficiency affects liver metabolism of essential oils
- Birds
- Health factors
 - Feline asthma, liver disease
 - Increased systemic absorption from inflamed or abraded skin or other mucous membranes

- Pediatrics
- Pregnancy and lactation
- Individual sensitivities
 - Allergic hypersensitivities
 - Idiosyncratic sensitivities



20


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Other Factors

- Lack of published research and testing in veterinary medicine
 - Extrapolations from human, rodent, and in vitro
 - Sporadic case reports may not provide an accurate clinical picture
- Drug interactions are possible
 - Some essential oils can affect cytochrome P450 enzyme activity and can affect metabolism and efficacy of other drugs
 - Sometimes people use multiple herbs, oils, supplements together
- Possible delay in diagnosis and treatment of other conditions

21


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Essential Oil History

- Signalment - Medical history - Other medications, supplements - What EO or products were used? - Diluted or concentrated? How dilute? Wet or dry? - Dose	- Route – If dermal, were there skin integrity issues pre-existing? - Time - acute or chronic? - Signs and onset in relation to exposure - Any home treatment? - Was there a medical reason for use?
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22


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Potential General EO Adverse Effects

- GI – Salivation, vomiting, diarrhea, anorexia - CNS – Lethargy, hiding – Weakness, ataxia – Tremors, seizures - Cardiovascular – Hypotension – Tachycardia, bradycardia - Hypo- or hyperthermia	- Respiratory – Coughing, sneezing, bronchospasm – Aspiration - Liver +/- renal injury - Reproductive effects - Dermal and mucous membrane injury – Direct irritation – Hypersensitivity reactions – Phototoxicity – Idiopathic reactions – Corrosive injury
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General Treatment

- Bathe with a hand dish washing detergent - Emesis induction generally not recommended - Rinse mouth - AC if stable and appropriate time frame - Fresh air +/- oxygen - Monitor vitals	- GI support - Consider chest rads, blood gas if resp signs - Consider lab work if a liver toxic oil, large and/or concentrated oil exposure, ill pet - Anticonvulsants - Symptomatic and supportive care of signs - ILE?
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24



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Specific Essential Oils

- Tea tree
- Pennyroyal
- Citrus oils
- Wintergreen and birch oils
- Sage, wormwood, and other thujone-containing oils



25



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Alex the Yorkie

- MN, 7 month old, 3 kg Yorkie
- Owners woke up this morning to find Alex lethargic, shaking, having trouble walking, and he had vomited overnight
- PE: ataxia, weak in the hind end, mild tremors, lethargic, active flea infestation, T 98.8



26



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Tea Tree Oil (Melaleuca Oil)

- 50-60% terpenes
 - Terpinen-4-ol is the main antiseptic
 - 1,8-cineole suspected skin irritant
- Antiseptic and fungicidal effects
- 100% tea tree oil is never recommended for pets
- Products containing low concentration tea tree oil are usually ok if used appropriately



27


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Tea Tree Oil Signs

- Clinical signs
 - CNS depression, weakness, ataxia, tremors, paresis
 - Salivation and vomiting
 - Hypothermia
 - Liver enzyme elevations – more common in cats
 - Rare deaths reported in dogs and cats
- Signs usually develop within 2-8 hours and resolve within 1-3 days

28


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Tea Tree Oil Treatment

- Bathe with hand dish washing detergent if dermal
- Do not induce emesis
- AC if stable – possibly multiple doses
 - Enterohepatic recirculation
- Fluids prn for hydration and perfusion

- GI support if GI signs
- Methocarbamol for tremors
- Heat support, nursing care
- Liver protectants and monitoring of liver prn



29


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Pennyroyal Oil

- *Mentha pulegium* – mint family
- Historically used as a flea/tick repellent, to give a mint flavor to foods, and to attempt to induce menstruation and abortion
- Pulegone the toxic component – 62-97%
 - Metabolites are hepatotoxic - menthofuran



30

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Pennyroyal Oil Signs

- Lethargy, vomiting, weakness within 2 hours
- Hepatic necrosis
- Hemorrhage – DIC, secondary to liver failure
– GI, pulmonary and cardiac hemorrhages; epistaxis
- Seizures
- Deaths reported in humans and dogs (oral and dermal exposures)

Sudekum M, Poppenga RH, & Raju N:
Pennyroyal oil toxicosis in a dog. JAVMA
1992; 200:817-818.

31

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Pennyroyal Treatment

- Bathe if dermal exposure
- Do not induce emesis, AC if stable and recent
- IVF
- GI support
- Monitoring of lab work (liver enzymes), BG, coags, vitals
- NAC 140 mg/kg loading dose PO or IV, then 70 mg/kg q 6 h x 7-17 doses
- SAME
- Anticonvulsants
- Transfusion if needed

32

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Citrus Oils

- Lemon, lime, mandarin, orange, grapefruit, bergamot, neroli
- Limonene and linalool
- Insecticidal activity vs all life stages of fleas
- Many citrus oils are phototoxic but may be processed to remove phototoxic components



33



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Citrus Oil Signs

- GI signs, salivation, lethargy, hypothermia
- Potential for dermal irritation +/- phototoxicity
- Reports of more serious effects in cats with concentrated dermal exposures (shampoos, dips)
 - Tremors, weakness, ataxia, dermal lesions, recumbency, coma, deaths reported
 - Hypotension
 - Case report of toxic epidermal necrolysis, sepsis, and death in a cat – thought to be idiosyncratic

Lee JA, Budgin JB, Mauldin EA. Acute necrotizing dermatitis with septicemia following application of a d-limonene-based insecticidal shampoo in cat. J Am Vet Med Assoc 2002; 221(2):258-262.

34



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Citrus Oil Treatment

- Bathe if dermal exposure
- Do not induce emesis
- AC if recent and stable
- GI support
- Fluid support
- Monitoring of BP and vitals
- Thermoregulation

- Supportive care of any dermal lesions
- Methocarbamol if needed for tremors



35



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Wintergreen and Birch Oils

- Wintergreen is 98% methyl salicylate
- Birch oil is 90-98% methyl salicylate
- Typically used topically for muscle pain
- 1 teaspoon (5 ml) of pure wintergreen oil is equivalent to 21.7 tablets of 325 mg aspirin (7052.5 mgs of aspirin)



36

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Wintergreen and Birch Signs

- Vomiting +/- blood
- Lethargy
- Anorexia
- Tachypnea (panting)
- Hyperthermia
- Potential for liver, renal injury, bleeding, seizures, death with high doses



37

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Wintergreen and Birch Treatment

- Bathe if dermal exposure
- Do not induce emesis
- AC if stable
- Baseline lab work and recheck q 24 h x 2-3 days
- Antiemetics
- GI protectants for 7-10 days or longer if GI ulcers
- IVF x 48-72 h
- +/- liver protectants

38

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Wormwood and Other Thujone-containing Oils

- Wormwood, boldo, sage, mugwort, thuja oils
- Thujone
 - Inhibits GABA-A receptor leading to CNS excitation and seizures



39



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Thujone Oil Signs

- Seizures
- Tremors
- Acidosis
- Restlessness
- Disorientation
- ARF, deaths reported in humans



40



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Thujone Oil Treatment

- Bathe if dermal exposure
- Do not induce emesis
- AC if stable
- Lab work
- Anticonvulsants
- Methocarbamol for tremors
- IVF
- Monitoring of vitals



41



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Liquid Potpourri



42



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Liquid Potpourri

- Essential oils + cationic detergents
 - Specific ingredients and concentrations are often unknown
 - Cationic detergents not typically declared or obvious
- Cats are most sensitive
- Cationic detergents cause corrosive injury to mucous membranes
- Signs usually develop within 4-6 hours but may take up to 12 hours to show full extent of injury

43



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Illustration: www.QuickHugger.com
M. TIGER

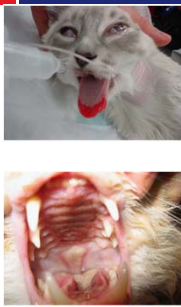
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Schlitt JC, Beal MW, Jutkowitz LA. Potpourri oil toxicity in cats: 6 cases (2000-2007). JVECC 2008; 18(5):551-516.

Liquid Potpourri Signs

- Lethargy, hiding
- Hypersalivation
- Vomiting, gagging
- Anorexia
- Burns in mouth, on tongue, palate
- Tachypnea, coughing
- Fever

45




Liquid Potpourri Treatment

- Bathe if dermal exposure
- Rinse mouth if recent
- Do NOT induce emesis
- AC contraindicated
- Fluids as needed for hydration
- GI protectants including sucralfate slurry
- Analgesia
- Soft diet +/- feeding tube
- +/- antibiotics
- +/- radiographs if respiratory signs

46




EO Diffusers

- 4 Diffuser Types
 - **Ultrasonic** – US vibrations disperse EO and steam into air (usually diluted in water)
 - **Nebulizer** – pressurized air releases a mist of atomized EO into air (usually undiluted)
 - **Heat, candle, lamp** – EOs are heated and released into air (usually undiluted)
 - **Evaporative or fan** – fan evaporates EOs from a wick or pad into air (usually undiluted)

47




Diffuser Safety Tips

- Ideally keep pets out of the room while diffusing
- At least be sure pets have the option to leave the room if they choose
- Do not run the diffuser for prolonged periods – generally 30 min or less is recommended
- Do not diffuse in an enclosed space – ventilate
- Use a diffuser that uses dilute oils
- Do not let pets lick or directly access oils or diffusers

48




Diffuser Safety Tips

- Do not position diffusers where they spray directly onto pets, bedding, kennels, dishes, etc.
- Avoid use of particularly toxic oils
- Discontinue use if adverse effects are noted and seek DVM care
- Ideally consult with a veterinarian who is knowledgeable about essential oils and pets, especially for pets with health concerns and/or medications

49




Sign up for...











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50

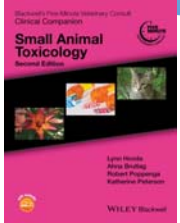
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- Includes 14 new topics to this edition covering cyclosporine A, sleep aids, tacrolimus, bath salts, synthetic marijuana, poisonous lizards, imidacloprid, spring bulbs, and sodium monofluoroacetate



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52




2019 Webinar Schedule Announced

April 2nd - Pets vs Toxic Plants: How to Tilt the Balance to Favor Your Patient

June 4th - The Fungus Among Us: Mushroom Poisoning in Cats & Dogs

September 17th - Pot & Pets: Updates on Cannabis Exposure in Dogs & Cats

November 19th - Overview of Rodenticide Classes and Therapy Needs



53




Thanks for attending!

Questions?



54




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- I attended the webinar but wasn't the person who logged in. Can I still get interactive CE credit?** Yes. Send your name and email address to info@petpoisonhelpline.com by **1pm central time on Feb. 6, 2018** (strict deadline).
- Can I watch the recorded webinar online for CE credit?** Yes. You can receive non-interactive CE credit. Go to the "For Vets" page on our website, www.petpoisonhelpline.com for more info.

Comments? Questions? Email us! info@petpoisonhelpline.com
