

LIQUID POTPOURRI AND CATS

Essence of Trouble

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A client returned from a brisk run on a cool autumn day and noticed a hint of cinnamon as her Norwegian Forest cat Uff-da welcomed her home. She discovered that the simmering potpourri jar that she had used earlier in the day was now tipped over, and the liquid potpourri was spilled on the counter and carpet. Upon further investigation, she noticed what appeared to be paw tracks in the liquid. Based on this physical evidence and the fact that Uff-da smelled a bit like cinnamon when he greeted her, the nervous cat owner deduces that Uff-da must have gotten into the liquid potpourri. Although he seems to be doing fine now, the client calls your clinic wondering if liquid potpourri can be hazardous to Uff-da and if there is anything that should be done for him.

Liquid potpourris are popular household air fresheners that are used year-round but especially during the holiday season. These products are typically sold in a concentrate form at grocery and retail stores. When heated electrically or by candle, a few tablespoons of liquid potpourri concentrate mixed with water will produce a pleasant aroma.

Liquid potpourri exposure can be cause for concern, especially when it involves cats.¹ Although cats, dogs, and other small mammals can be af-

ected similarly by contact with liquid potpourri, cats appear to be more at risk because potpourri containers are often kept on countertops or other areas frequented by cats.¹ Dermal exposures may occur if a pet comes in contact with a leaky liquid potpourri bottle or simmer pot or if a spill occurs. Dermal contact can quickly lead to oral exposure, especially since a cat will be compelled to groom itself after coming into contact with the liquid. A curious cat may also ingest liquid potpourri while investigating a leaky bottle or simmer pot.

MECHANISM OF ACTION

The ingredients in liquid potpourri that are responsible for potential health problems are cationic detergents and essential oils. Even if they are not listed specifically on the product label, these substances should be kept in mind when handling liquid potpourri exposures.

Cationic Detergents

Cationic detergents are generally considered more toxic than anionic and nonionic detergents.^{2,3} Widely used in fabric softeners, germicides, and sanitizing products,^{3,4} cationic detergents are composed of quaternary ammonium compounds, which typically include aryl and alkyl chemical groups.³

Cats may come into contact with liquid potpourri because of their curious nature.



Essential Oils

Essential oils are botanically derived volatile oils.¹ They are found in numerous products, including perfumes, fragrances, solvents, epidermal and sunburn analgesics, massage oils, shampoos, soaps, and insect control preparations intended for use in both humans and pets.^{5,6} Herbal preparations for toothaches, headaches, and muscle aches may also contain essential oils.⁶ Such essential oils as peppermint and spearmint oil are used as flavorings in confectionaries as well.^{6,7}

CLINICAL SIGNS

Exposure to cationic detergents is likely to cause more significant systemic signs than is exposure to essential oils. The concentration of the cationic detergent portion of liquid potpourris typically determines the severity of the ulcerative injury.¹ Cationic detergent concentrations of 1% to 7.5% may result in mucosal membrane damage, whereas concentrations greater than 7.5% are corrosive and may result in oral, pharyngeal, and esophageal burns.³ Cats exposed to cationic detergent concentrations of 2% or less may develop oral ulcers, stomatitis, and pharyngitis.¹ Delayed onset of mucosal ulcers (often up to several hours after exposure) is not uncommon.¹

A complete exposure history is vital because liquid potpourri exposures may involve signs similar to those seen following exposure to cholinesterase-inhibiting agents (e.g., increased salivation, depression, dyspnea).¹ Potential complications include secondary bacterial infection, aspiration pneumonia, and esophageal perforation.⁸ Liver damage – although a secondary complication – is also possible.⁹ In serious cases in which oral and esophageal ulcers have developed and/or esophageal perforation has occurred, there is a risk of development of hepatic lipidosis in anorectic cats that do not receive intensive nutritional support.

TREATMENT

Most liquid potpourri exposures involve dermal and oral contact. Prompt veterinary assistance after exposure is the key to avoiding serious and possibly life-threatening consequences. Initial decontamination techniques should be employed immediately, and the patient should be monitored carefully for several hours after exposure.¹ Home monitoring may be sufficient in patients with very minor exposures. (If there is a question about the level of exposure, the owner should always be instructed to bring the pet in for evaluation.) Moderate to severe exposure requires professional veterinary care. Although extensive treatment and several days of hospitalization and supportive therapy may be required, most cats fully recover from liquid potpourri exposure.¹

Ocular Exposure

Initial decontamination is important in patients with ocular liquid potpourri exposure. The affected eye(s) should be irrigated with lukewarm tap water or physiologic saline solution for a minimum of 20 minutes.¹⁰ Ocular chemical burns require treatment with ophthalmic lubricant ointments.¹¹ Examination for possible corneal ulceration should be conducted at initial presentation, and the eyes should be monitored for several hours after exposure for any signs of irritation. In most cases, signs of eye irritation and possible

Clinical Signs of Exposure to Cationic Detergents and Essential Oils^{1,3,5,7,12}

Type of Exposure	Cationic Detergents	Essential Oils
Dermal	Erythema Edema Intense pain at exposure site Ulceration	Skin hypersensitivity Skin irritation
Ocular	Mild eye irritation Corneal injury	Eye irritation Erythema Pain in the eye Lacrimation Photophobia
Oral	Irritation of the mouth, pharynx, or esophagus Salivation Dyspnea Vomiting (with possible hematemesis) Hyperthermia Dysphagia Inappetence CNS depression Weakness Muscle fasciculation Mucosal ulceration Mucosal burns Inflammation and possible tissue necrosis of the mouth, tongue, pharynx, and esophagus Hypotension Metabolic acidosis Pulmonary edema Respiratory depression Anorexia Seizures Collapse Coma	Mucous membrane and gastrointestinal irritation CNS stimulation and/or depression Diarrhea Weakness Hypersalivation Ataxia Muscle tremors Hypothermia Vomiting Anorexia

CNS = central nervous system.

ulceration will be evident either immediately or within several hours of exposure.¹¹ Corneal ulcers should be treated with topical antibiotics (e.g., gentamicin sulfate, tobramycin) four to 12 times daily.¹¹ Severe ocular exposure will likely require referral to a veterinary ophthalmologist.¹

Dermal Exposure

Cats with dermal exposure to liquid potpourri must be bathed immediately with a mild liquid dishwashing detergent or noninsecticidal cat shampoo¹ followed by thorough towel drying to protect the cat from becoming chilled.¹ The skin should be monitored for erythema, swelling, pain, or pruri-

tus.^{1,12} It is especially important to examine the footpads and interdigital tissue because cats often will have walked through spilled liquid potpourri.¹² Symptomatic treatment of dermal exposure resulting in cutaneous injury may require the use of analgesics, antiinflammatories, and antibiotics.¹

Oral Exposure

Oral exposure should be assumed in cases of dermal exposure because cats avidly groom themselves. The cat should be immediately encouraged to drink milk or water.³ Yogurt or ice cream may also be offered. Dilution can be achieved using an oral syringe

in cases in which cats will not willingly drink on their own.¹

Because of the caustic nature of cationic detergents, emesis and gastric lavage are contraindicated in patients that have ingested liquid potpourri.¹⁰ Likewise, the risk of a stomach tube penetrating injured esophageal tissue should be avoided. The possibility that the presence of charcoal may diminish visualization of oral and esophageal burns is one reason to avoid administering activated charcoal.¹

MONITORING AND PAIN MANAGEMENT

Cats should be monitored for several hours after a liquid potpourri exposure (if oral or ocular ulcers are going to develop, signs will typically appear within 3 to 4 hours).¹ Increased salivation, lethargy, weakness, persistent vomiting, hyperthermia, and anorexia may indicate that mucosal ulceration (seen as gray-white or red, inflamed tissue) or burns have occurred.¹ Eye irritation (e.g., redness, swelling) would be evident if ocular ulcers were developing. Treatment of oral, esophageal, gastric, and duodenal ulcers is best achieved through administration of sucralfate slurries.¹³

The patient should be monitored diligently for increased body temperature or increased total white blood cell count.¹ Intensive supportive care, including administration of broad-spectrum antibiotics and IV fluids, is indicated in cases of severe stomatitis, pharyngitis, esophagitis, or esophageal ulceration.¹ Placement of a gastrostomy tube may be required for nutritional maintenance.¹ Although endoscopy may be beneficial in determining the extent of mucosal damage, it should be used cautiously because of the potential for puncture of weakened esophageal tissue.¹

Cats that experience pain as a result of liquid potpourri exposure may vocalize, shiver, or pant.¹ Moderate pain can be managed with butorphanol tartrate,^{1,13} whereas more severe pain may be managed with fentanyl citrate or transdermal fentanyl.^{13,14} Cats general-

Dried Potpourri

Although dried potpourri may often be treated with essential oils, there is typically not as much risk of developing signs at the level of severity discussed in regard to liquid potpourris. Liquid potpourri preparations typically contain a combination of essential oils and cationic detergents. Generally, cationic detergents are used to prevent mold growth in liquid preparations. In most cases, cationic detergents are not used in dried potpourri preparations. Signs may develop in dried potpourri exposures but would be much less severe.

An additional consideration regarding dried potpourri exposures is the make up of the dried material. For instance, a dried preparation consisting of lilies of the Liliaceae family could pose a major risk to cats. The risk would be more from the plant itself (the fact that true lilies cause acute renal failure in cats) than from the essential oils.

ly benefit from transdermal fentanyl approximately 6 hours after patch application, with pain relief lasting for at least 104 hours.¹³ Proper site selection and preparation for application of the patch (including safety precautions regarding its handling) are discussed elsewhere.¹³

CONCLUSION

The scenario regarding Uff-da's exposure to liquid potpourri could occur in any cat household. Therefore, owners should be aware of the potential dangers of seemingly harmless household items. Keeping pets away from potentially hazardous substances is the key to preventing injury. The full recovery of pets exposed to liquid potpourri depends on appropriate and timely initial decontamination, vigilant monitoring of the pet after exposure, and prompt veterinary care when moderate to serious clinical signs develop.

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