

# Chocolate and Methylxanthine Toxicosis

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## BASIC INFORMATION

### Description

Chocolate contains caffeine and theobromine, both of which are members of the methylxanthine group of compounds. Another member of this class is theophylline. The methylxanthines occur naturally in several plants, such as the leaves of *Thea sinensis* (used to make tea), the seeds of *Theobroma cacao* (used to make chocolate), and the fruit of *Coffea arabica* (used to make coffee). Theophylline is present in tea and some medications. Caffeine is found in coffee, tea, chocolate, colas, the herb guarana, and some human stimulant drugs. Theobromine is present in chocolate, cocoa beans, cocoa bean hulls (cocoa bean mulch), colas, and tea.

### Causes and Toxicity

Methylxanthines as a group act as central nervous system stimulants. They are rapidly absorbed from the gastrointestinal tract. The most common cause of poisoning in small animals is eating (ingestion of) chocolate, although toxicity has occurred following ingestion of coffee grounds, tea bags, or human medications. In addition to their stimulant effects, many chocolate products contain high levels of fat that may cause gastrointestinal upset and pancreatitis. Cocoa powder contains the highest amounts of caffeine and theobromine, followed by unsweetened baker's chocolate, semisweet chocolate, and milk chocolate. White chocolate contains negligible amounts of methylxanthines but can still pose a risk of gastrointestinal upset and pancreatitis.

### Clinical Signs

The most common signs are restlessness and hyperactivity, vomiting, diarrhea, increased drinking and urinating, and a rapid heart rate. Animals may begin pacing and are unable to sit still. They may pant and appear anxious. Hyperactivity may progress to tremors and seizures if large amounts are ingested.

### Diagnostic Tests

Diagnosis is based on a history of recent ingestion along with consistent clinical signs. The vomitus may contain evidence of the substance ingested. Various body tissues can be analyzed for methylxanthines; however, this test cannot be performed at the veterinary hospital or clinic, and samples must be sent to an outside laboratory. Laboratory and other tests may be recommended to rule out other causes of similar clinical signs.

## TREATMENT AND FOLLOW-UP

### Treatment Options

In some cases, your veterinarian may recommend that you induce vomiting at home. This should be done only under the direction of your veterinarian. Depending on the amount ingested and signs the animal is exhibiting, activated charcoal may be administered. Activated charcoal helps prevent absorption of the methylxanthine agent from the gut. Clinical signs are treated symptomatically and may require intravenous fluids, as well as medications to control hyperactivity, seizures, vomiting, and a rapid heart rate.

### Follow-up Care

Care must be taken to ensure that methylxanthine-containing products are not accessible to pets. Chocolate poisoning is especially a risk during holidays such as Halloween, Christmas, Valentine's Day, and Easter.

### Prognosis

In most cases, recovery occurs within 24–48 hours with appropriate treatment. The prognosis is guarded (uncertain) if large amounts are ingested, if treatment is delayed, or if the animal is exhibiting severe signs.