

# Why does chocolate kill dogs?

18 April 2022

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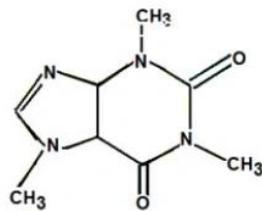
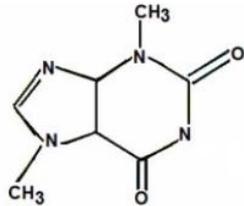


Be careful folks, especially at chocolate-rich times of year like Easter, Valentines, birthdays and Xmas!

Actually it doesn't. For 97 out of 100 dogs.  
And it's something called **theobromide** in the chocolate that causes the **damage**.

# Theobromine

- Found in chocolate
- Effects similar to caffeine
- Although theobromine does not cause harmful effects with humans, it is highly toxic to some domestic animals, including dogs and horses



But while plain chocolate is the most dangerous, milk is in the middle and white is the least toxic, it will make them all **very sick** indeed, and could also cause long term problems even if they seem to recover well, so **why risk it?**

Keep those human sweets well out of a dog's reach! At least with humans obesity and dental cavities are the worst effects of over eating chocolate, unless another condition like **diabetes** is present.

**So chocolate is potentially lethal to dogs.**

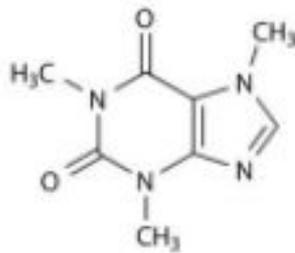
But it's not that simple.

Chocolate is derived from the roasted seeds of the plant *Theobroma cacao*

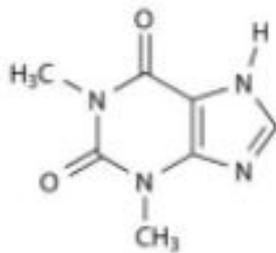


[Yes, this is where chocolate and cocoa come from!](#)

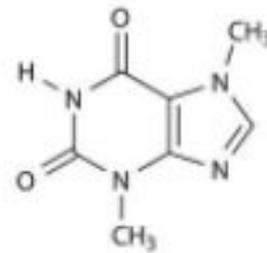
and the main toxic components are something called methylxanthine alkaloids



Caffeine



Theophylline



Theobromine

Notice caffeine is here too- so chocolate has caffeine AND this sneaky theobromine stuff!

theobromine (above)  
and caffeine

## Caffeine Characteristics



- Widely used stimulant found in coffee, chocolate and tea
- Added to some pain killers to speed up their effects, e.g. aspirin
- Diuretic (frequent urination)
- Increases alertness, concentration and restlessness
- Can cause anxiety, irritability and sleeplessness



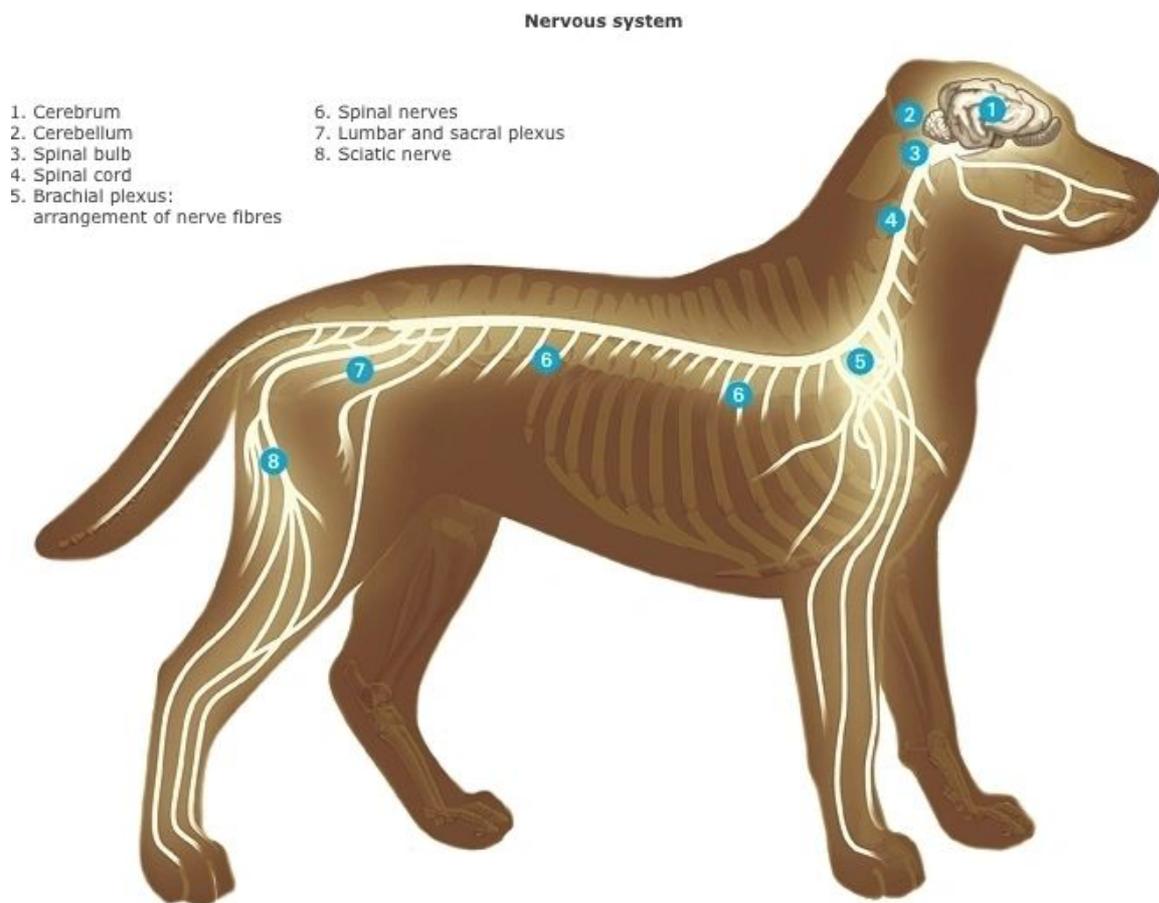
which humans can get very sick from if taken in too high a

[quantity](#) (this is a link to a case study on that.)

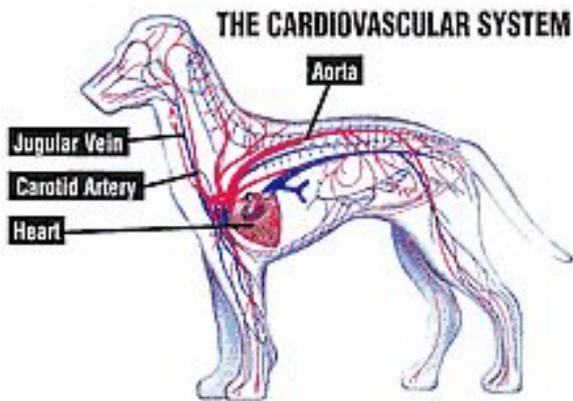
However, luckily for us we can usually easily digest and excrete these methylxanthines, the half life- or how long it stays in the body- of theobromine being 2-3 hours. However absorption in dogs is slow, processing mostly in the liver before excretion in the urine. And the half life of theobromine in dogs is about 18 hours, so it takes 6 times as long to stop having an effect.

## WHAT PARTS OF THE DOG ARE AFFECTED BY THIS THEO THINGY STUFF?

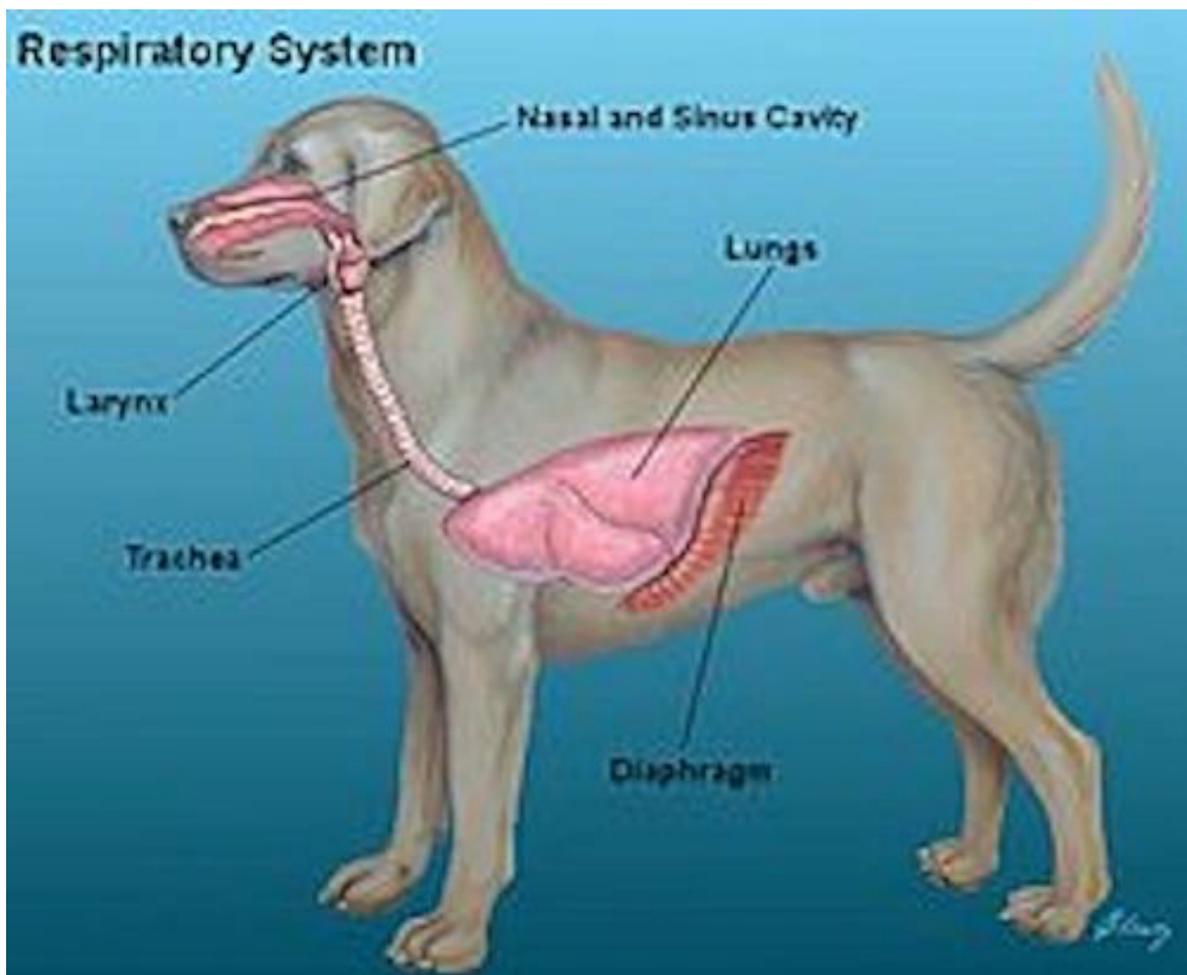
Theobromine primarily affects the central nervous system



cardiovascular system,

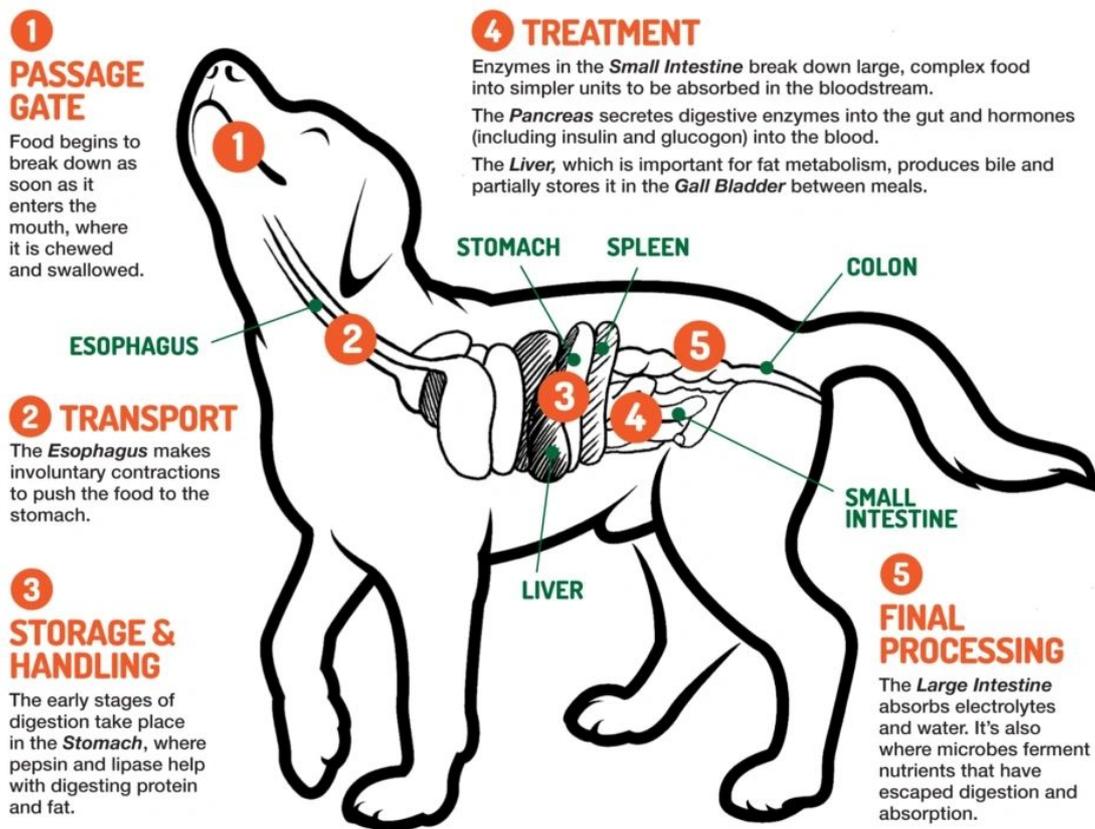


respiratory system



as well as having a diuretic effect (it will make you dog want to

pee a lot) so it has an effect on the gastro intestinal system too!



## WHAT ARE THE SIGNS OF CHOCOLATE POISONING?

The first signs of poisoning in dogs include

- **vomiting** and/or **diarrhoea**
- haematemesis (**vomiting of blood**)
- and polydipsia (increased level of **thirst**)

# CHOCOLATE: A DOGGY DANGER

No amount of chocolate is safe for dogs. Even a tiny piece can make your canine companion very sick. The amounts shown below can cause serious illness and require **IMMEDIATE** veterinary attention!

## WHY IS CHOCOLATE TOXIC TO PETS?

Chocolate is made from the beans of the cocoa tree and contains two substances that can be extremely harmful to our pets:

1. Theobromine
2. Caffeine



## WHAT ARE THE SIGNS OF CHOCOLATE TOXICITY?

Signs that your pet has ingested a toxic amount of chocolate usually occur within 6 to 12 and vary by the amount and type of chocolate consumed.

- » Excessive Thirst
- » Vomiting
- » Diarrhoea
- » Racing heartbeat
- » High blood pressure
- » Arrhythmia
- » Tremors
- » Seizures

**THE DARKER THE CHOCOLATE THE HIGHER THE RISK TO YOUR DOG!  
REMEMBER NO AMOUNT OF CHOCOLATE IS SAFE FOR YOUR DOG**

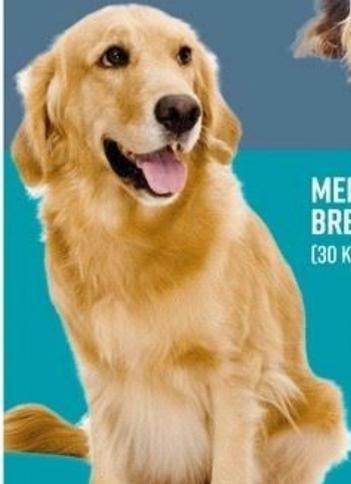
### TOY TO SMALL BREEDS (2.5 KG)

DANGER level 40g  
Milk Chocolate



### SMALL TO MEDIUM BREEDS (10 KG)

DANGER level 150g  
Milk Chocolate



### MEDIUM TO LARGE BREEDS (30 KG)

DANGER level  
500g  
Milk Chocolate

### LARGE TO GIANT BREEDS (45 KG)

DANGER level  
750g  
Milk Chocolate



Other signs may include

- hyperexcitability, (over excited, **won't calm down**)
- hyperirritability, (**anxious and angry** for no reason you can see)
- tachycardia- which is the posh word for an **abnormally rapid heart rate**. It is usually characterised by heart rates greater than 140 bpm in large dogs, 160 bpm in medium sized dogs, 180 bpm in small dogs, or 220 bpm in puppies

and can result in heart failure or death.

- excessive panting,
- ataxia- **loss of balance** due to **damage to the brain**, which is responsible for movement and coordination. This causes abnormal movements, especially of the head and eyes, that lead to **dizziness**. Cerebellar ataxia is **sometimes confused with a stroke** because they may have similar symptoms
- and muscle twitching.

How much chocolate can your dog eat before showing signs of toxicity ??? <small>(rough guideline only, if in doubt seek veterinary advice!)</small>		SMALL DOG (3-5kg)	MEDIUM DOG (10-15kg)	LARGE DOG (30kg +)
<b>MILK CHOCOLATE</b> 	MILD SIGNS eg vomiting, diarrhoea, hyperexcitability	30-50 grams	100-150 grams	300+ grams
	MODERATE SIGNS eg tremors, heart irregularities	60-100 grams	200-300 grams	600+ grams
	SEVERE SIGNS eg seizures	90-150 grams	300-450 grams	900+ grams
<b>DARK CHOCOLATE</b> 	MILD SIGNS eg vomiting, diarrhoea, hyperexcitability	12-20 grams	40-60 grams	120+ grams
	MODERATE SIGNS eg tremors, heart irregularities	24-40 grams	80-120 grams	240+ grams
	SEVERE SIGNS eg seizures	36-60 grams	120-180 grams	360+ grams
<b>BAKING CHOCOLATE</b> 	MILD SIGNS eg vomiting, diarrhoea, hyperexcitability	4-7 grams	13-20 grams	40+ grams
	MODERATE SIGNS eg tremors, heart irregularities	8-13 grams	25-40 grams	80+ grams
	SEVERE SIGNS eg seizures	12-20 grams	40-60 grams	120+ grams

If too a high level of chocolate was ingested by the dog, effects may progress to

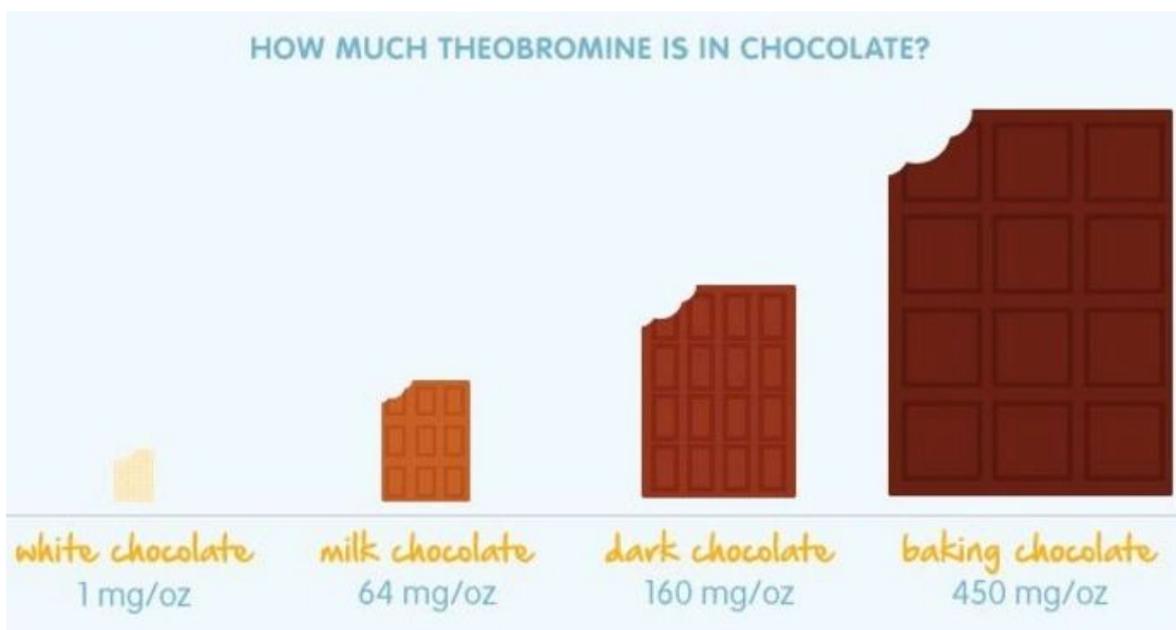
- cardiac arrhythmias, (irregular heart beat)
- seizures,
- and death.

Most symptoms will begin to appear **within two hours** of ingestion, but, as theobromine is metabolised slowly, it can take as **long as 24 hours** for them to appear and up to three days for recovery. Although there is **no specific antidote**, watch out for vomiting and make sure you have in your doggy first aid kit some easy to store and give the dog like **activated charcoal**.

The most convenient way to (if they will eat) such a thing if you don't have any is charcoal dog biscuits crushed up or in a broth as they will need fluids. **If they are struggling to breathe do not try and feed them anything.** They will need to go to the vets to be put on oxygen, and intravenous fluids.

The lethal dose of theobromine is reported to be 100-500 mg (a very small amount!) per kg of body weight in dogs.

Here are the amounts in oz (ounces) as some chocolate products especially cocoa and hot chocolate can come in ounces.



So as we can see- not all types of chocolate contain the same amount of theobromine.

Metric version:

1. cocoa powder and plain chocolate contain the highest concentrations (20 mg/g and 15 mg/g) ,
2. milk chocolate has much less (2 mg/g)

3. white chocolate has the lowest concentration (0.1 mg/g).

Using this table could help, especially for the foodstuffs in the second part of the chart.

**Table 1.** Relative Amounts of Methylxanthines in Various Forms of Chocolate\*

Compound	Theobromine (mg/oz)	Caffeine (mg/oz)
White chocolate	0.25	0.85
Milk chocolate	58	6
Dark, sweet chocolate	130	20

Semi-sweet chocolate chips	138	22
Baker's (unsweetened) chocolate	393	47
Dry cocoa powder	737	70
Instant cocoa powder	136	15
Cocoa beans	600	Not available
Coffee beans	0	600
Cocoa bean hulls	255	Not available

\*The exact amounts of methylxanthines will vary because of natural variation of the cocoa beans and variation within brands of products.

Source : References 1 and 3 and Hershey Foods Corporation: Caffeine and theobromine contents of Hershey's products on a per-serving basis. <http://www.hersheys.com/consumer/nutrition/index.html>; Oct. 2000.

"Toxicology Brief" was contributed by Sharon Gwaltney-Brant DVM, PhD, ASPCA Animal Poison Control Center, 1717 S. Philo Road, Suite 36, Urbana, IL, 61802; (888) 4ANI-HELP.

Note, the first part of this chart is for American chocolate! It has much lower cocoa levels than UK chocolate.

It's much better, especially as many dogs are also lactose intolerant (their bodies have an allergic reaction to milk proteins) to **give special "pet chocolate" like carob based treats that do not contain theobromine** instead, (but can still cause obesity) or peanut butter treats that **do not contain xylitol- a sweetener occurring naturally in many fruits for example but is also toxic to dogs**. We sell these in our shop, and incoming are yoghurt drops and strawberry drops too!

And if you **garden- cocoa shells** often used as fertiliser or mulch also contains very high levels of theobromine (25 mg/g). It has that *sweet chocolate smell* too so it may be attractive to dogs but *just a few mouthfuls could kill them*.

Remember, dogs will absolutely eat chocolate if they find it—so keep it all, including tins of cocoa or drinking chocolate, out of paws' reach.

### HOW DO I KNOW IF MY DOG HAS EATEN TOO MUCH CHOCOLATE?

Super fast method as seconds may be all you have!

1. Check the weight on the bag or wrapper. Use the table below for grams, the table above for ounces (oz) or use this handy converter- 1 ounce (oz) = 28g and x by 28.
2. Then decide if your dog's small (10kg and under), medium (25kg and under) or large (over 25kg.) Here we will say the dog is medium as our example dog is 22kg.
3. Then make sure what kind of chocolate it is- white is least harmful, plain is worst so if it had plain chocolate in it, work it out just for plain chocolate (worse case scenario)
4. Then calculate the amount of chocolate eaten: **if it was a 200g bar and your dog ate half then  $\div 2 = 100g$** , for example. If it was something more complicated like a bag or box of chocolates, get the calculator out on your phone and divide the weight on the bag by how many pieces about there are, and compare to what's left (like 7 pieces and you think the bag had about 15 bits in for example like a pack of Fun Size Mars bars; which are milk chocolate usually. If the bag is 350g you'd put  $350 \div 15$  which is about 23g per bar,

then x 8 (15-7) to get how much chocolate could have been eaten.  $23 \times 8 = \mathbf{184g}$ . Yikes, that's a lot for any dog but not awful for a medium dog! )

5. Here we will say it was all solid dark chocolate (always do worse case scenario).
6. Check the **quick chart** below (to make it worse, there's a lot of caffeine in dark chocolate too!) = here for a **medium** dog the **danger levels are 70g for plain chocolate** and here the dog has eaten **100g of plain chocolate** in our example, **or 450g for milk chocolate** and in our example the dog ate **184 g of milk chocolate**.

At these levels- in this case **100g of plain chocolate from the bar the dog is in great danger of developing serious clinical signs** if he is not promptly treated at the vet's. With the **184g of milk chocolate from the bag example a medium dog is on about a 40% dose** ( $184 \div 450$  as in the chart) below fatal but take nothing for granted and do look out for symptoms as listed above.

### QUICK CHART

#### Fatal Doses of Chocolate\*

		Milk Chocolate	Dark or Baking Chocolate
	Small Dogs	120g	20g
	Medium Dogs	450g	70g
	Large Dogs	900g	120g

\*Fatal doses are estimates only and in some cases may be less in sensitive dogs. A pet that ingests chocolate should receive veterinary attention immediately.

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adapted from

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### **FURTHER READING**

#### **ON THE [156 DOG SURVEY](#)**

out of 156 dogs suspected of eating chocolate:

One hundred and twelve dogs had no clinical signs.

Forty-four dogs had clinical signs of chocolate intoxication.

Twenty-eight of these 44 dogs ingested dark and bitter chocolate.

Reasons for presentation were  
agitation (33),  
tremor (22),  
vomiting (21),  
panting (11),  
polyuria/polydipsia (seven)  
and diarrhea (two).

Common clinical findings were  
sinus tachycardia (28),  
tachypnea/panting (14),  
hyperthermia (10)  
and dehydration (seven).

Clinical pathological findings in 34 of 44 dogs consisted of  
hyperlactataemia (23),  
hypokalaemia (16),  
mild hyperglycaemia (16)  
and mild alanine aminotransferase (ALT)

and aspartate aminotransferase (AST) elevation (14). After decontamination (apomorphine, activated carbon) and symptomatic treatment (including forced diuresis, sedatives), 43 of the 44 dogs survived. clinical significance: In dogs with potential chocolate intoxication, the type and amount of chocolate and the time of ingestion are important factors. Cardiovascular, neurological and gastrointestinal signs are the most common clinical signs. In this case series, the prognosis after decontamination and symptomatic therapy was good, with a mortality rate of less than 3%.

[PDF for further reading](#)

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and

ON SYMPTOMS AND HOW TO WORK OUT IF YOUR DOG HAS OVERDOSED ON CHOCOLATE

by [Sharon Gwaltney-Brant DVM, PhD](#), ASPCA Animal Poison Control Center, 1717 S. Philo Road, Suite 36, Urbana, IL, 61802; (888) 4ANI-HELP.

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Created by:

Lora's Luck Ltd

20-22 Wenlock Road, London, N17GU

Company Number 12130277  
EORI GB372394676000  
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