



Broad Spectrum Adsorbent

For peace of mind when you don't know what they've been up to



National Veterinary Services

393290	Duotox Liquid - Select	110ML
393289	Duotox Paste - Select	30ML



Introducing Duotox

The broad spectrum, multi-action adsorbent

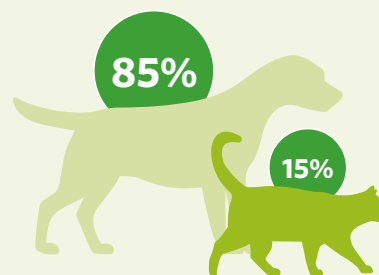
Duotox is a broad spectrum toxin binder containing a combination of activated charcoal and diosmectite.

- ✓ Complimentary feed to help with absorption and excretion.
- ✓ Available as both a paste and liquid.
- ✓ This product is suitable for dogs, cats and fur animals.
- ✓ Activated Charcoal (AC) and Diosmectite are powerful adsorbents which help maintain normal gut health.
- ✓ Also contains Sorbitol and Glycerine that act as laxatives to support gastric emptying, and Curcumin and Piperine which exhibit antioxidant properties.

Rising pet poisonings: a growing concern

Accidental ingestion of unwanted substances remains a significant threat to our pets.

- In 2020, **7.1 million** pets fell ill after eating something poisonous¹.
- In 2021, the VPIS reported a **40% increase** in the number of poisoning enquiries².
- The VPIS receives an average of **60 calls per day** for assistance in cases involving suspected poisoning².
- Vets report seeing on average **>3000** cases involving poisoning every week across the UK¹.



Synergistic adsorption: enhanced removal of diverse contaminants with activated charcoal and diosmectite

The complementary adsorptive properties of activated charcoal and diosmectite give broad spectrum cover over unwanted substances with widely differing chemical properties.

Activated Charcoal

High affinity for acidic molecules



The carbon, hydroxyl and carboxylic groups are able to adsorb different molecules with differing affinities.

- Non-ionised substances
- Poorly water soluble substances
- Non-polar organic molecules
- Anionic particles
- Non-specific adsorption
- E.g. Anticoagulant rodenticides, grapes and raisins, chocolate

Diosmectite

High affinity for basic molecules



The high surface charge between its negatively charged outer layers and positively charged inner layers, gives it a high cation exchange capacity and powerful adsorptive capacity.

- Alkaline or basic substances
- Hydrophilic substances
- Cationic compounds
- Amphoteric compounds
- Non-ionic compounds
- Organic solutes
- Specific adsorption
- E.g. Ethylene glycol (antifreeze), many medications, chocolate





Activated charcoal alone isn't enough: tailored adsorbents needed for effective detox

To help remove unwanted substances from the body, binders or adsorbents are commonly administered.

CAUTION - No single binder will adsorb all substances.

The chemical structure and behaviours of the ingested substance determine which adsorbents are most suitable.

This includes substance:

- Size
- Solubility
- Ionisation
- pH
- Stomach contents

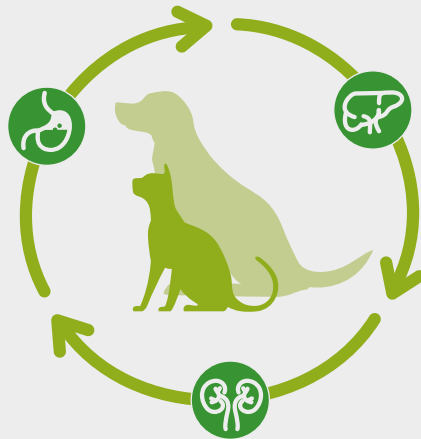
Activated Charcoal is the most commonly administered adsorbent but has little to no affinity to many common substances. Relying on activated charcoal alone can create a gap.



Enhanced gut and liver function: the synergy of sorbitol, glycerine, piperine, and curcumin

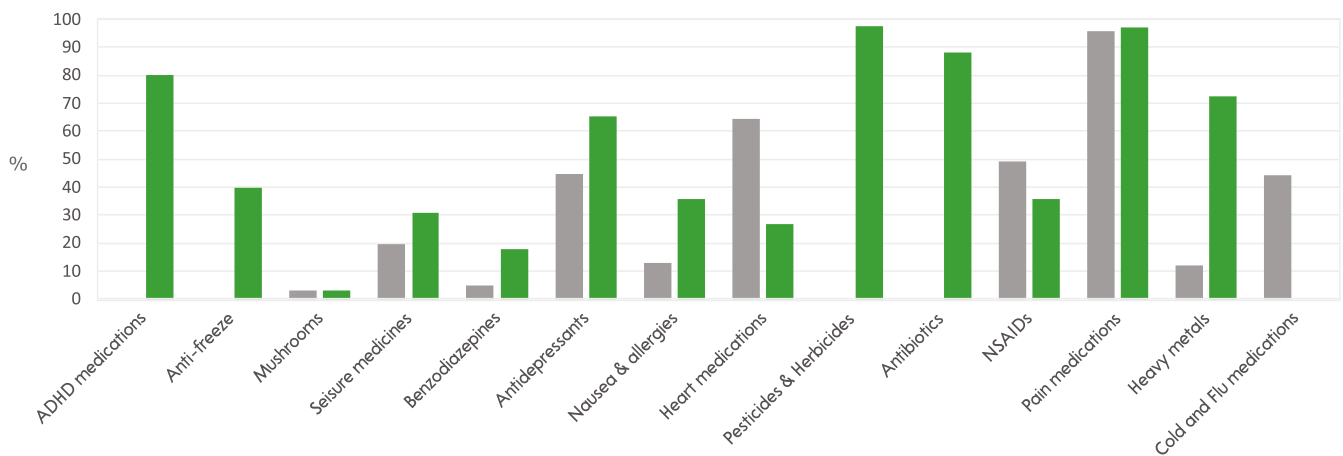
- ✓ Sorbitol and glycerine gently help the gut transit time.
- ✓ Piperine and curcumin help to aid the normal function of the liver and kidneys.

Where both adsorbents show affinity for the same substance, a combined product should lead to adsorbency from both ingredients!



Average percentage adsorption per toxin type^{1,2,3,4,5,6,7}

● Activated Charcoal ● Diosmectite






DUO TOX

Designed with 'use' in mind

Liquid or paste depending on pet status and needs

- ✓ Liquid for first administration.
- ✓ 30ml paste for follow up administration where necessary.



Liquid suspension

- ✓ Soft, squeezable bottle to aid administration.
- ✓ Soft bendy nozzle to aid administration.
- ✓ Nozzle fits directly to tubes.



Follow up paste

- ✓ Dial-a-dose for easy administration.
- ✓ Wide nozzle bore for ease of flow.
- ✓ Reduces pressure needed on plunger.
- ✓ Reduces risk of blocking and sudden product release.
- ✓ Up to 75% wider than other products.

Administration

Depending upon the substance ingested, administration should either be as a single administration or repeated every 4-6 hours for 24-48 hours.

For example, substances that are entero-hepatically recycled, delayed/prolonged release/long acting formulations, substances that delay gastric emptying and those with low affinity for or that easily desorb from binders, should receive repeat administrations.

When using adsorbents in a repeated manner it is advisable to monitor the electrolyte status of the animal.

Formulated for consistency

- ✓ No sedimentation of liquid.
- ✓ Maximum concentration allowing ease of use (to minimise volume).
- ✓ Smooth flow of both liquid and paste to aid application and reduce risk of aspiration.
- ✓ Enhanced palatability profile.

Liquid suspension

In-hospital use - 1st administration

Weight	Administration (ml)
<12kg	Half bottle (55ml)
12-25kg	Full bottle (110ml)

Or 5ml per kg

Paste

Follow up in-hospital or at-home

Weight	Administration (ml)
<10kg	0.5 syringe (15ml)
10-20kg	1 syringe (30ml)
>20kg	Additional 15ml/10kg

Or 1.5-2ml per kg

Part no.	Description	Size
393290	Duotox Liquid - Select	110ml
393289	Duotox Paste - Select	30ml

References

1. www.directlinegroup.co.uk/en/news/brand-news/2021/7-1-million-pets-fall-ill-after-eating-something-poisonous.html 2. www.vpisinglobal.com/wp-content/uploads/2023/11/VPIS_3006-Annual-Report-2022.pdf 3. Albengres, E, Urien, S, Tillement, J.P., Oury, P., Decour, S, Flouvat, B., and Drieu, K. (1985) Interactions between Smechtite, a mucus stabilizer and acidic and basic drugs. European Journal of Clinical Pharmacology, 28:601-605. 4. McGinity, J, and Loch, J. (1976) In vitro adsorption of various pharmaceuticals to montmorillonite. Journal of Pharmaceutical Sciences. 65:6. 5. Neuvonen, P.J. and Olkola, K. (198) Oral activated charcoal in the treatment of intoxications. Role of single and repeated doses: Medical Toxicology, 3:33-58. Doi: 012-5966/88/0001-0033. 6. American Academy of Clinical Toxicology and European Association of Poisons Centres and Clinical Toxicologists. (2005) Position paper: Single dose activated charcoal: Clinical toxicology, 43:61-87. Doi: 10.1081/CLT-20051867. 7. Zeliner, T., Proso, D., Forber, E., Hoffmann-Walbeck, P., Genser, D., and Eyer, F. (2019) The use of activated charcoal to treat intoxications. Deutsches Arzteblatt International, 116:311-117. Doi: 10.3238/arztebl2019.0311. 8. Castela-Popin, N., Cai, S., Vatiér, J., Keller, F., Souleau, C.H. and Farinotti, R. (1999) Drug interactions with diosmectite: a study using the artificial stomach-duodenum model. International Journal of Pharmaceutics, 182:111 - 119. 9. Frissel, M.J. (1961) The adsorption of some organic compounds, especially herbicides, on clay minerals. Versl. Landbouwk. Onderz., 67:3.



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