FELINE UR St/Ox URINARY™

Complete dietetic pet food for adult cats for the dissolution and reduction of recurrence of struvite stones. It is also formulated for the nutritional management of cats with lower urinary tract disease.

RECOMMENDED FOR & NOT RECOMMENDED FOR

- ✓ Dissolution of struvite uroliths
- ✓ Reduction of struvite urolith recurrence
- ✓ Reduction of calcium oxalate urolith recurrence
- ✓ Idiopathic cystitis

- ✗ Not suitable for pregnancy, lactation and growth
- ✗ Chronic renal insufficiency
- ✗ Other conditions associated with diuresis
- ✗ Fluid retention such as ascites and oedema

195 g 85 g 1.5 kg and 5 kg

KEY BENEFITS

LOW RSS

With St/Ox urinary security
to reduce the risk of urinary struvite and calcium oxalate crystals and stones forming

STRUVITE D SSOLUTION

To help promote dissolution
of urinary struvite stones

MODERATE KCAL

Moderate calories
to help maintain ideal body weight

ADDITIONAL BENEFITS & CHARACTERISTICS

Helps minimise the occurrence of both struvite and calcium oxalate stones
Reduced urinary mineral concentrations

Helps to promote effective urine dilution, reducing concentrations of minerals and irritants in the urine
Wet and dry diets both formulated to increase water intake

Helps support the bladder mucosal barrier
Natural source of glycosaminoglycans (GAGs) precursors

Help maximise natural anti-inflammatory processes
Source of omega-3 fatty acids

COMPOSITION (DRY)

Chicken variety:
Rice, wheat flour, dried poultry protein (16%, of which 50% chicken), corn protein meal, pea protein, dried egg, minerals, dried beet pulp, pork fat, digest, corn, fish oil.

Urine acidifying substance: phosphoric acid.

Ocean fish variety:
Rice, corn protein meal, wheat flour, dried poultry protein, soya protein, pea protein, corn, pork fat, dried salmon protein (4%), dried beet pulp, minerals, dried egg, digest, fish oil.

Urine acidifying substance: phosphoric acid.

COMPOSITION (CAN)

Pork kidney, liver & lung, turkey, poultry heart & liver, rice flour, cellulose, minerals, various sugars.

COMPOSITION (POUCHES)

Salmon variety:
Chicken, pork, salmon (7%), rice flour, minerals, cellulose, various sugars.

Urine acidifying substances: calcium sulphate, sodium bisulphate.

Chicken variety:
Chicken (17%), pork, salmon (4,5%), rice flour, minerals, cellulose, various sugars.

Urine acidifying substances: calcium sulphate, sodium bisulphate.

KEY NUTRIENT VALUES*

	Dry**	Wet (can)	Wet (pouch)**
Moisture	6.5%	80.8%	80.7%
Protein	35.0%	10.0%	9.5%
Fat	12.0%	5.0%	4.5%
Carbohydrate	37.0%	2.1%	2.1%
Crude fibre	1.5%	0.4%	0.6%
Crude ash	8.0%	1.7%	2.6%
Calcium	0.9%	0.14%	0.16%
Phosphorus	0.9%	0.14%	0.16%
Sodium	1.2%	0.10%	0.36%
Potassium	0.7%	0.26%	0.15%
Magnesium	0.08%	0.02%	0.02%
Chloride	2.4%	0.22%	0.42%
Sulphur	0.3%	0.21%	0.20%
Taurine	1500 mg/kg	1788 mg/kg	1729 mg/kg
Vitamin E	605 IU/kg	143 IU/kg	164 IU/kg
Metabolisable energy (ME)[1]	380 kcal/100g	91 kcal/100g	84 kcal/100g
RSS struvite	<1	<1	<1
RSS oxalate	<10	<10	<10
Urinary pH	6 – 6.3	6 – 6.3	6 – 6.3

* Typical analysis in the final product as fed. ** Average of the two varieties.
[1] Calculated following NRC 2006 equations.

FEEDING GUIDELINES

Increased water consumption can help dilute the urine and further decrease the risk of crystal formation. For dissolution of struvite stones, an initial feeding period of 5-12 weeks is recommended. The diet should be continued for at least 4 weeks past complete dissolution of the stone(s) and for the reduction of recurrence ideally a minimum of 6 months. For long-term use, an initial feeding period of up to 6 months is recommended, but the cat should be re-evaluated regularly as indicated by the underlying condition.

DAILY FEEDING QUANTITY

Body weight (kg)	Daily feeding quantity						
	Dry only (g/day)	Wet only (can/day)	Wet only (pouch/day)	Dry + can combined		Dry + pouch combined	
				Dry (g/day)	Can/day	Dry (g/day)	Pouch/day
2	30	⅔	1 ½	10	½	25	⅓
3	45	1	2 ⅓	20	½	35	½
4	60	1 ⅓	3	15	1	40	1
5	75	1 ⅔	4	30	1	55	1
6	90	2	4 ⅔	40	1	70	1
7	105	2 ⅓	5 ½	55	1	85	1
8	120	2 ⅔	6 ¼	70	1	100	1

For cats over 8kg: for each additional kg of body weight, feed an additional 15 g of dry food or ⅓ of can or ¾ pouch per day.
When feeding dry and wet can, for each addition of ¼ Feline UR wet can, reduce by 10g dry kibble.

GENERAL PRINCIPLES FOR THE MANAGEMENT OF URINARY STONES

1. Surgical removal or dietary dissolution of the stones with PURINA® PRO PLAN® VETERINARY DIETS UR ST/OX Urinary™*.
2. Quantitative analysis of the stones to determine future management.
3. Eliminate and manage the recurrence of urinary tract infections or other underlying conditions that may contribute to stone formation.
4. Encourage water consumption. This increases urine volume and lowers the urinary concentration of mineral components.

GUIDELINES FOR REDUCING THE RISK OF URINARY STONE RECURRENCE

Urinary stones form as a result of varying combinations of underlying risk factors, many of which are uncontrollable inherent metabolic or genetic factors. Surgical removal of stones does not eliminate the underlying metabolic risk factors. Therefore, it is important to attempt to control as many external risk factors as possible. For cats with urolithiasis, the right nutrition can promote a specific targeted pH (between 6 and 6.3) to help dissolve struvite stones and crystals and can also prevent the formation of calcium oxalate. It is also key to ensure dilution of the urine, which can be achieved through additional hydration such as feeding 100% wet food or feeding PRO PLAN® HC Hydra Care alongside PPVD UR Urinary™ ST/OX dry / dry + wet food.

STRUVITE STONES (MAGNESIUM AMMONIUM PHOSPHATE) IN CATS

1. Feed a mildly acidifying diet formulated to produce a relative supersaturation (RSS) below 1 (such as Feline UR ST/OX Urinary™) to enable the dissolution of struvite stones.
2. Culture the urine and administer appropriate antibiotic therapy if indicated. Most cases of struvite stones in cats are not associated with primary infection, but may result in a secondary infection.
3. Increase water consumption. Feline UR ST/OX Urinary™ promotes increased water intake and increased urine volume. Feline UR ST/OX Urinary™ has been proven to completely dissolve struvite uroliths in as little as 2 weeks in cats[1].

CALCIUM OXALATE STONES IN CATS (TO HELP MINIMISE RECURRENCE)

1. Increase water consumption. Feline UR ST/OX Urinary™ promotes increased water intake and increased urine volume.
2. Avoid over-restriction of dietary magnesium. Magnesium is a natural inhibitor of calcium oxalate stones.
3. Feed a diet, such as Feline UR ST/OX Urinary™, that results in urine that is at least metastable for calcium oxalate (assessed by RSS).
4. If hypercalcaemia is present, identify and eliminate the cause.

URATE STONES IN CATS

1. Rule out or correct portosystemic shunt if present.
2. Feed a low purine diet (such as Feline NF Advanced Care canned).

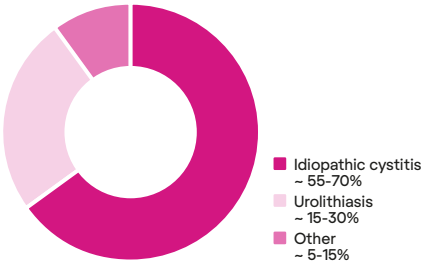
* Dissolution possible for struvite stones.

1. Torres-Henderson C, *et al.* (2017) Use of Purina Pro Plan Veterinary Diet UR Urinary ST/OX to Dissolve Struvite Cystoliths. *Top Companion Anim Med.* Jun; **32(2)**: 49-54. doi: 10.1053/j.tcam.2017.07.007.

The most common causes of feline lower urinary tract disease (FLUTD) are idiopathic cystitis , urethral plugs and urolithiasis, together accounting for over 90% of cases below the age of 10[2].

Overall recurrence rates of up to 40-45% have been reported[2].

APPROXIMATE FREQUENCY OF CAUSES OF FLUTD



FELINE IDIOPATHIC CYSTITIS

By definition, the cause of idiopathic cystitis in cats remains undetermined, although both stress and abnormalities of the urothelial barrier have been reported. The recommended only approach to managing cats with recurrent idiopathic cystitis is[2]:

- Environmental enrichment
- Reduction of stress
- Encouraging water intake
- Appropriate dietary management
- Additional medical therapy in refractory cases (which may include analgesics and amitriptyline)

FELINE UROLITHIASIS

Fundamental to urolith development is supersaturation of the urine with the calculogenic crystalloids – without this crystal and urolith formation will not occur.

Other factors that may play a role include genetics, age, concurrent diseases, gender, and urine composition of various promoters and inhibitors of crystal formation.

Calculogenic crystalloids may be present in urine in one of three concentration ranges:

- **Supersaturation:** if the crystalloid concentration falls in this zone, spontaneous crystal formation and growth may occur
- **Metastable saturation:** concentrations in this zone will not permit spontaneous crystallisation, although growth of pre-formed crystals is possible
- **Undersaturation:** in this zone the urine is undersaturated and crystal dissolution will occur

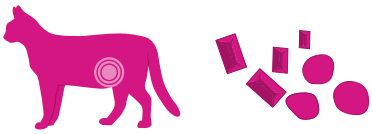
The two most common types of urolith are struvite (magnesium ammonium phosphate) and calcium oxalate, which account for 80% or more of all feline uroliths. Today, the prevalence of struvite and calcium oxalate uroliths are similar. While the development of struvite uroliths is sensitive to urine pH (the crystalloids being much less soluble in alkaline urine), the development of calcium oxalate crystals is much less influenced by urine pH.

1. Torres-Henderson C, *et al.* (2017) Use of PURINA® PRO PLAN® VETERINARY DIETS UR Urinary St/Ox to Dissolve Struvite Cystoliths. *Top Companion Anim Med.* **32(2)**: 49-54.
2. Hostutler RA, *et al.* (2005) Recent concepts in feline lower urinary tract disease. *Vet Clin Small Anim.* **35**; 147-70.

CLINICAL ADVANTAGES WITH THE USE OF FELINE UR ST/OX URINARY™

PURINA® PRO PLAN® VETERINARY DIETS UR ST/OX Urinary™ has been specifically designed to **benefit cats with FLUTD** – promoting a higher volume and lower concentration of urine and urine with a low RSS for both struvite and calcium oxalate.

A recently published study[1] reported the efficacy of feeding PURINA® PRO PLAN® VETERINARY DIETS UR ST/OX Urinary™ for the dissolution of struvite uroliths in cats with naturally occurring disease. The results of the study suggest that feeding PURINA® PRO PLAN® VETERINARY DIETS UR ST/OX Urinary™ can successfully dissolve crystals and uroliths that are likely struvite and may lessen the risk of recurrence of struvite and calcium oxalate uroliths.

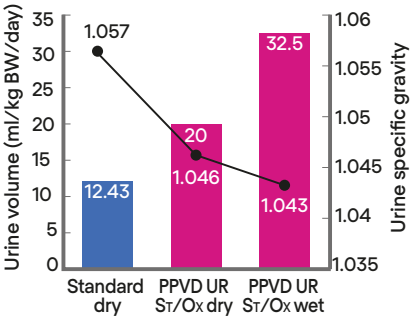


IDIOPATHIC CYSTITIS

Feline UR ST/OX Urinary™ provides:

- a moderate and proven safe salt content (1.2% as fed) in the dry formulation to encourage an increased fluid intake and increased urine volume
- increased urine volume and decreased urine specific gravity (SG), to promote more frequent urination and a lower concentration of substances that may irritate the urothelium
- added omega-3 fatty acids and natural GAGs, that may help to reduce bladder inflammation and support the integrity of the bladder lining

URINE SG AND VOLUME IN CATS FED FELINE UR ST/OX[2]



STRUVITE AND OXALATE UROLITHIASIS

PURINA® PRO PLAN® VETERINARY DIETS UR ST/OX Urinary™ contains reduced fat and optimum protein levels to help prevent obesity, a known risk factor for urolithiasis. Tested with RSS, Feline UR ST/OX Urinary™ promotes a urine:

- undersaturated for struvite, producing an environment where struvite crystals and stones can dissolve, and where their formation is prevented
- in the low metastable range for calcium oxalate – an environment that should prevent de novo crystallisation and greatly reduce the risk of any crystal/stone growth
- in a controlled pH range (6.0-6.3), ideal for managing struvite crystalluria and not detrimental to oxalate

Other relevant literature
- Picavet P, *et al.* (2007) Analysis of 4495 canine and feline uroliths in the Benelux. A retrospective study: 1994-2004. *J Anim Physiol Anim Nutr(Berl).* **91**: 247-51.
- Cannon AB, *et al.* (2007) Evaluation of trends in urolith composition in cats: 5,230 cases (1985-2004). *J Am Vet Med Assoc.* **231**: 570-6.