



Cystophan®

High Level
Support
For Feline
Urinary Health

Protexin®
veterinary 
Science and nature in balance

Feline Lower Urinary Tract Disease

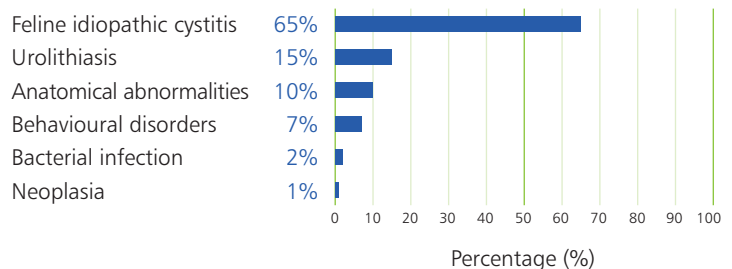
Feline lower urinary tract disease (FLUTD) is the collective term for conditions that can affect the bladder and urethra of cats



Causes of FLUTD

Although there are a number of different causes of FLUTD, the majority of cats less than 10 years of age have feline idiopathic cystitis (FIC)¹. The other causes of FLUTD include:

Causes of FLUTD in Cats Less than 10 Years of Age¹



A diagnosis of FIC can be made after the exclusion of these other disorders.

Feline Idiopathic Cystitis: Risk Factors

FIC typically affects cats between 1-10 years of age (with a peak risk of 2-6 years). Both male and female cats are at an equal risk.

There are several factors that may make a cat more at risk of developing FIC:

- Neutered cats
- Overweight cats that lead a sedentary lifestyle
- Cats that spend most of their time living indoors
- Cats that use litter trays
- Cats that eat mostly dry food
- Cats that live in a multicat household.

Feline Idiopathic Cystitis: Clinical Signs

There are only a number of ways that the urinary tract can respond to insults:

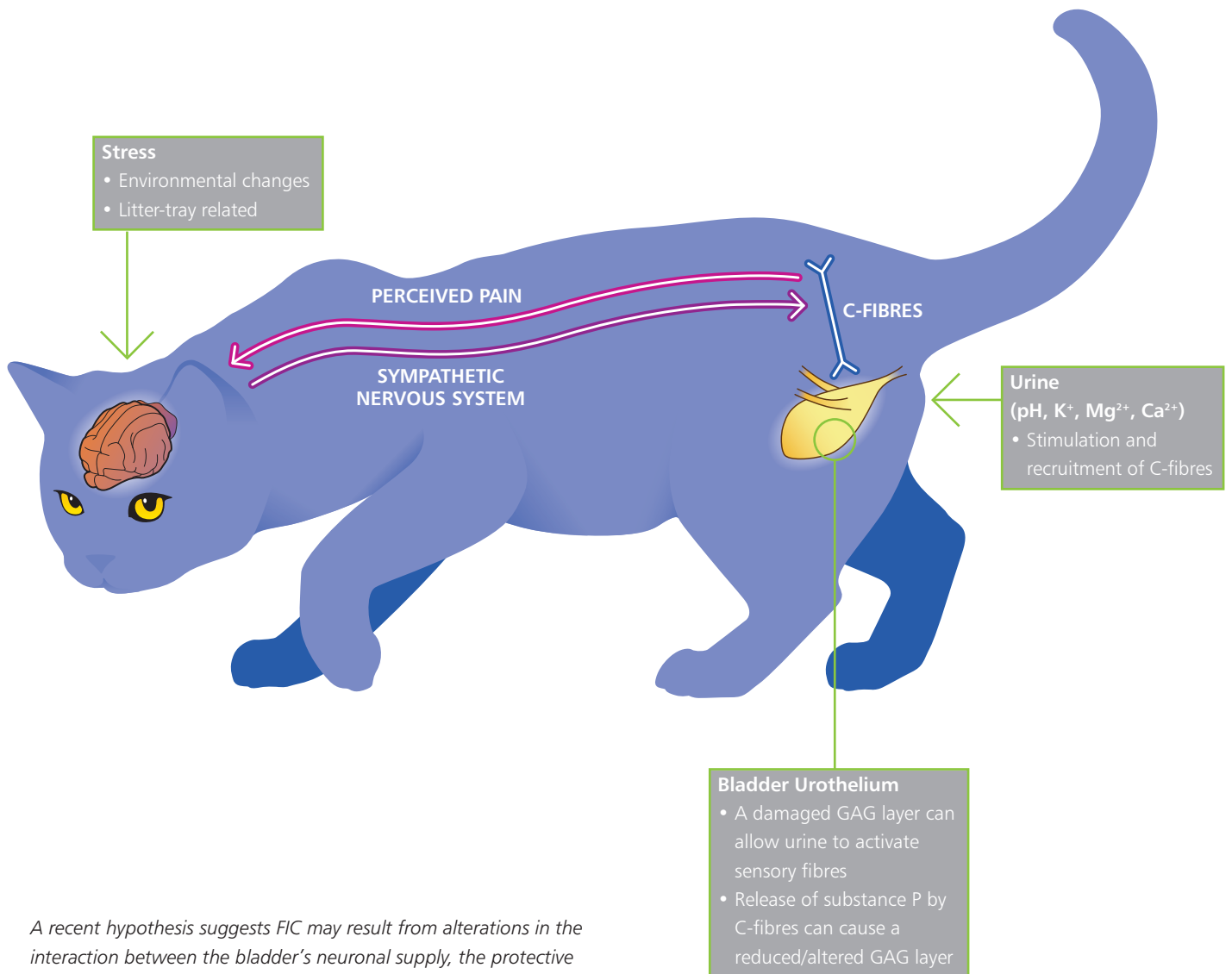
- Urination in inappropriate locations (periuria)
- Difficulty or pain urinating (dysuria)
- Increased frequency of urination (pollakiuria)
- Straining to urinate (stranguria)
- Blood in the urine (haematuria)
- Behavioural changes – increased aggression, vocalisation.

Nearly 50% of cats with FIC will have recurrent signs within one year².



Feline Idiopathic Cystitis: Pathophysiology

FIC is thought to be the result of complex interactions between several body systems including the bladder, nervous system and other external factors



A recent hypothesis suggests FIC may result from alterations in the interaction between the bladder's neuronal supply, the protective glycosaminoglycan (GAG) layer that lines the bladder and compounds within the urine³.

Sensory neurones (C-fibres) can be stimulated, either by the brain (in response to stress) or by local triggers within the bladder (e.g. protons, potassium ions or concentrated urine). Damage to the urothelium and the overlying glycosaminoglycan (GAG) layer can allow the contents of the urine to activate the sensory fibres, which may be perceived as painful by the brain. Compared to normal cats, some cats with FIC have decreased urine concentrations of GAG, decreased surface GAG expression and increased bladder wall permeability.

Stress is also an important trigger factor for FIC. This stress can be environmental, physiological, psychological or due to concurrent disease. Cats with FIC can exhibit inappropriate responses to stress.

Feline Idiopathic Cystitis: Management

The Aims of Treatment are:

- To decrease the severity and duration of clinical signs during an acute episode of FIC
- To increase the interval between episodes
- To decrease the severity of clinical signs in those cats with persistent FIC.



First Line Treatment Involves:

Analgesia and Anti-inflammatory Drugs

Since FIC can be a particularly painful condition, analgesics and anti-inflammatory drugs are often prescribed.

Increasing Water Intake

The aim of increasing water intake is to produce more dilute urine. Highly concentrated urine can be more irritating to the bladder wall, especially in cats with a disrupted GAG layer.

Environmental Enrichment

Stress plays a key role in the pathophysiology of FIC. Environmental enrichment can help to reduce anxiety in cats.

Litter Tray Management

The aim is to make the litter tray as pristine as possible. Anything that could discourage the use of a litter tray may encourage urine retention. This in turn may lead to increased stimulation of the sensory fibres within the bladder by the constituents of urine.

Glycosaminoglycan Supplementation

Supplemental GAGs help to restore the GAG layer within the bladder, which is depleted in cats with FIC.



Introducing Cystophan

Taking the Management of FIC to the Next Level



Ingredients

N-acetyl D-glucosamine

A GAG precursor which acts as a building block for other GAGs (such as chondroitin sulphate).

Hyaluronic acid

One of the main components of the protective GAG layer that lines the bladder.

L-tryptophan

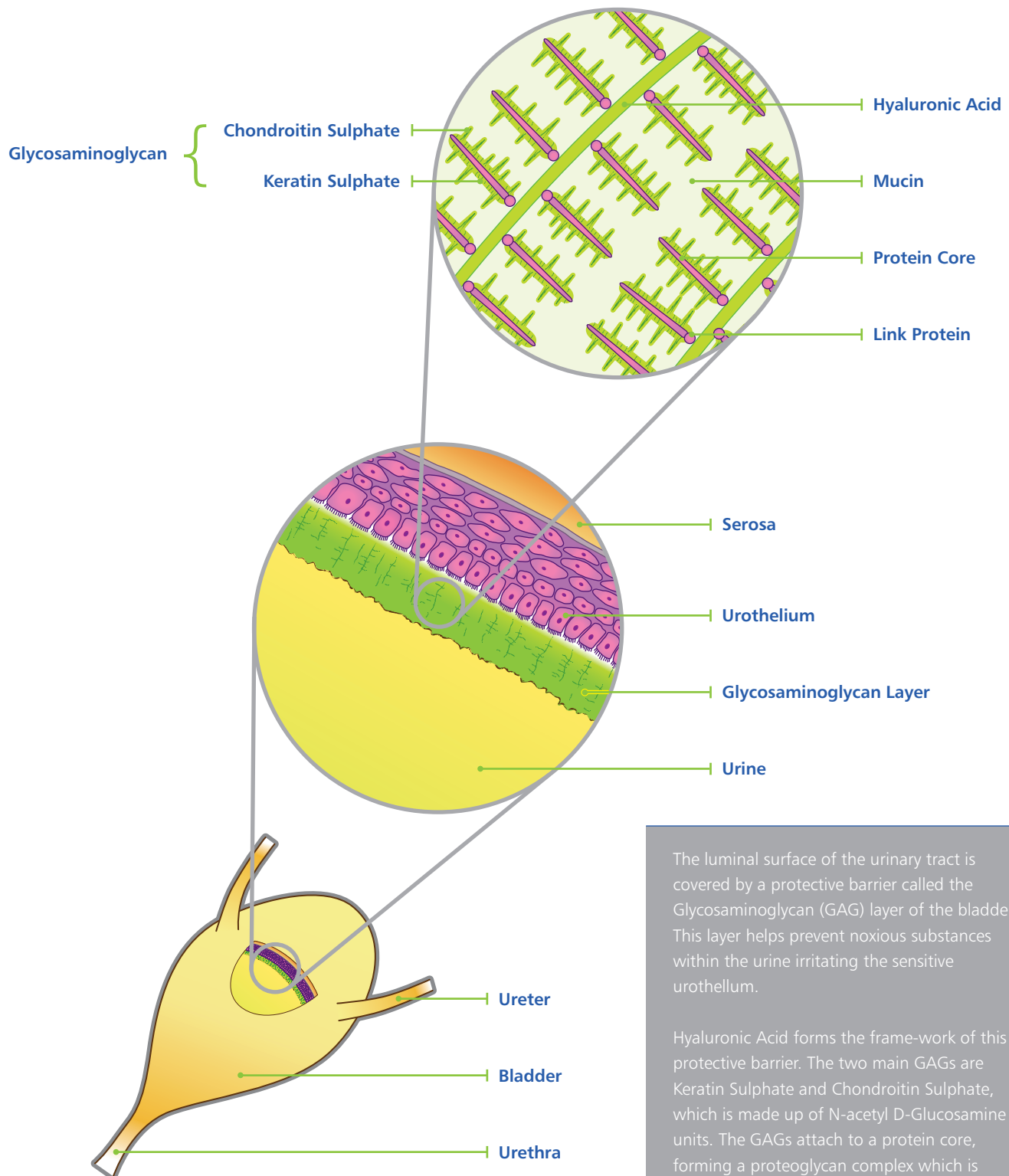
L-tryptophan is an amino acid and also the precursor to serotonin - an inhibitory neurotransmitter which regulates mood and anxiety. L-tryptophan has been shown to reduce stress-related behaviour and anxiety levels in cats*.

Artificial Chicken Flavour

For enhanced palatability.



The Glycosaminoglycan (GAG) Layer of the Bladder



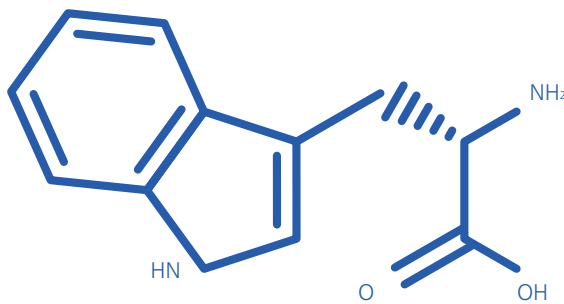
The luminal surface of the urinary tract is covered by a protective barrier called the Glycosaminoglycan (GAG) layer of the bladder. This layer helps prevent noxious substances within the urine irritating the sensitive urothelium.

Hyaluronic Acid forms the frame-work of this protective barrier. The two main GAGs are Keratin Sulphate and Chondroitin Sulphate, which is made up of N-acetyl D-Glucosamine units. The GAGs attach to a protein core, forming a proteoglycan complex which is linked to the hyaluronic acid via a link protein.



The Relationship between L-tryptophan and Serotonin

L-tryptophan

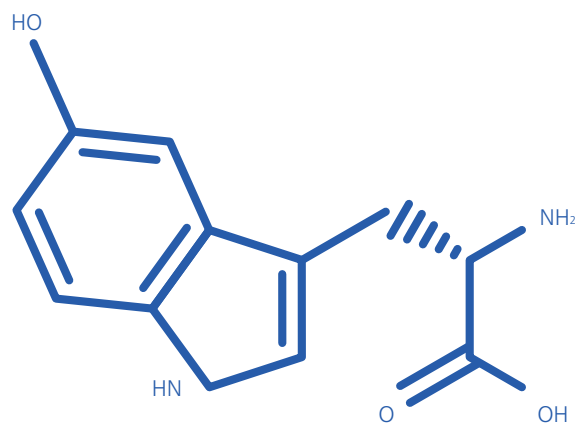


Serotonin has an extremely important physiological function in the body, especially in controlling anxiety. It is unable to cross the blood-brain barrier but it is possible to increase Serotonin levels by supplementing L-tryptophan.

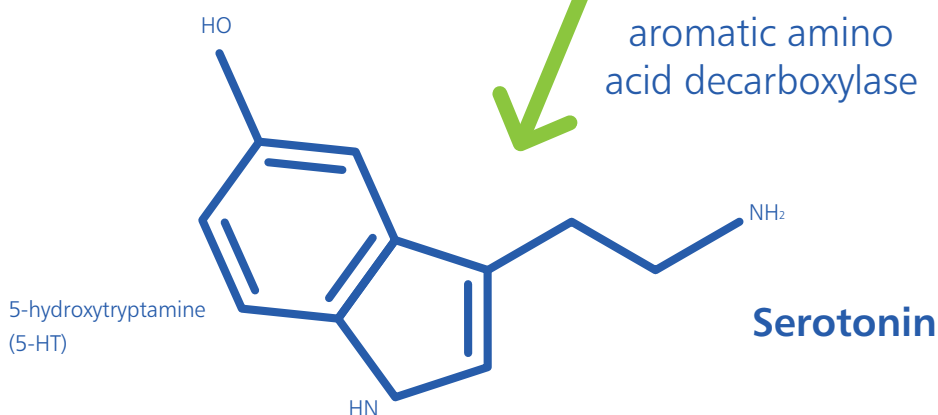

Supplemented L-tryptophan is converted by tryptophan hydroxylase and aromatic amino acid decarboxylase into 5-hydroxytryptamine, which is also known as Serotonin.



tryptophan hydroxylase



aromatic amino acid decarboxylase



5-hydroxytryptamine (5-HT)

Serotonin



Cystophan

High Level Support For Feline Urinary Health

Presentation

Each capsule contains:

- 125mg N-acetyl D-glucosamine
- 37.5mg L-tryptophan
- 10mg Hyaluronic acid

Available in tubs of 30 and 240 capsules



Directions For Use

The capsules can be given whole or opened and the contents sprinkled onto food.

Initially administer according to the guidelines below for at least two weeks:

Cats <3kg	1 capsule daily
Cats >3kg	2 capsules daily

For maintenance, administer according to the guidelines below:

Cats <3kg	1 capsule every other day
Cats >3kg	1 capsule daily

Give for as long as considered necessary or as advised by your veterinary surgeon.



References

1. Buffington CA and Chew DJ. 2007. Management of non-obstructive idiopathic/interstitial cystitis in cats. In: *BSAVA Manual of Canine and Feline Nephrology and Urology*. Eds Elliot J & Grauer GF. British Small Animal Veterinary Association, Gloucester.
2. Gunn-Moore DA and Shenoy CM. 2004. Oral glucosamine and the management of feline idiopathic cystitis. *Journal of Feline Medicine and Surgery*. 6(4): 219-225.
3. Buffington CAT, Chew DJ, DiBartola SP. 1996. Interstitial cystitis in cats. *Veterinary Clinics of North America*. 26(2): 317-326.
4. Da Graca Pereira G, Fragoso S, Pires E. 2010. Effects of dietary intake of L-tryptophan supplementation on multi-housed cats presenting stress related behaviours. In: *BSAVA Scientific Proceedings*. British Small Animal Veterinary Association, Gloucester.



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