

CANINE NF RENAL FUNCTION™

Complete dietetic pet food for adult dogs for the support of renal function in case of chronic renal insufficiency, and for reduction of calcium oxalate, urate and cystine stones formation.

RECOMMENDED FOR & NOT RECOMMENDED FOR

- ✓ Chronic renal insufficiency
- ✓ Protein losing nephropathy
- ✓ Conditions that require restricted dietary sodium
- ✓ Reduction of calcium oxalate urinary stone formation
- ✓ Reduction of urate and cystine urinary stone formation*
- ✓ Renal failure associated to leishmaniasis
- ✓ Hepatic disease associated with encephalopathy
- ✗ Conditions that require high protein or phosphorus intake
- ✗ Not suitable during pregnancy, lactation and growth



400 g

3 kg and 12 kg

KEY BENEFITS



LOW PHOSPHORUS

Low level of phosphorus

to help slow the progression of chronic renal insufficiency



OPTI PROTEIN

Restricted but high quality proteins

to help minimise loss of muscle and reduce toxin formation



OMEGA 3

Omega-3 fatty acids

to help minimise glomerular hypertension and help support natural anti-inflammatory processes

ADDITIONAL BENEFITS & CHARACTERISTICS

Helps minimise the metabolic acidosis associated with renal insufficiency

Non-acidifying diet

Helps manage calcium oxalate urolithiasis

Low level of calcium and vitamin D3. Non-acidifying to promote a neutral urine pH (6.7 to 7.5)

Helps reduce urate stone formation*

With low levels of purines. Low levels of high quality protein

Helps reduce cystine stone formation*

Moderate level of sulphur amino acids. Urine alkalisng properties. Low levels of high quality protein

Helps with compliance in inappetent or anorexic patients and for long term use

Highly palatable for better acceptance

*Dry NF formula only

COMPOSITION (DRY)

Corn[#], rice[#], dried egg[#], dried whey[#], pork fat, sugar, digest[#], dried beet pulp[#], minerals, soybean oil, fish oil.

Protein sources.

Urine alkalisating substance:
calcium carbonate.

COMPOSITION (CAN)

Pork (liver, heart), turkey by products, rice flour, corn meal, egg powder, minerals, pork fat, fish oil, sunflower oil, various sugars.

KEY NUTRIENT VALUES*

	Dry	Wet
Moisture	7.5%	72.0%
Protein	13.0%	6.0%
- Total sulphur amino acids	0.67%	-
Fat	14.5%	7.2%
- Omega-6 fatty acids	2.5%	1.53%
- Omega-3 fatty acids	0.4%	0.12%
- EPA + DHA	0.22%	0.052%
Carbohydrates	58.5%	12.5%
Crude fibre	2.0%	0.2%
Crude ash	4.5%	2.1%
Calcium	0.75%	0.27%
Phosphorus	0.4%	0.12%
Potassium	0.8%	0.45%
Magnesium	0.09%	0.03%
Sodium	0.2%	0.09%
Chloride	0.66%	0.36%
Sulphur	0.21%	0.12%
Vitamin E	305 IU/kg	144 IU/kg
Vitamin D ₃	1429 IU/kg	278 IU/kg
Purines	0.06%	-
Metabolisable energy (ME) ¹	390 kcal/100g	133 kcal/100g

* Typical analysis in the final product as fed.

¹ Calculated following NRC 2006 equations.

FEEDING GUIDELINES

Dogs with chronic renal insufficiency should be fed PURINA® PRO PLAN® VETERINARY DIETS Canine NF Renal Function™ for life.

DAILY FEEDING QUANTITY

Body weight (kg)	Dry (g/day)	Can/day	Dry + can combined	
			Dry (g/day)	Can/day
2.5	65	½	20	⅓
5	105	¾	35	½
10	165	1¼	30	1
15	220	1¾	80	1
25	310	2⅓	170	1
35	385	2¾	250	1
45	455	3¾	320	1
70	615	5	340	2

For dogs over 70 kg: for each additional 5 kg of body weight, feed an additional 35 g of dry NF food or ¼ can wet NF food. When feeding dry and wet, for each addition of 100g Canine NF wet can, reduce by 35g dry kibble.

NUTRITIONAL MANAGEMENT OF CHRONIC RENAL INSUFFICIENCY IN DOGS

The key therapeutic points in chronic renal insufficiency can be remembered by the acronym: **NEPHRONS**.

N	Nutrition
E	Electrolytes
P	pH of blood (acid-base status); proteinuria
H	Hydration
R	Retention of wastes
O	Other renal insults – avoid
N	Neuroendocrine function – secondary hyperparathyroidism, hypoproliferative anemia, and hypertension
S	Serial monitoring – CRI is irreversible and progressive

Nutritional modification is an important component of managing patients with CRI, and it involves more than just protein and phosphorus restriction. Diets formulated for use in patients with CRI are calorically dense, phosphorus and sodium restricted, have increased potassium and B vitamins, contain omega-3 fatty acids, contain soluble fibre, and are alkalinising¹.

The major aims of nutritional support are to slow progression of the condition, manage complications associated with CKD and alleviate clinical signs of the condition, whilst maintaining quality of life. Maintenance of lean muscle mass and optimal body condition is key¹, and the following objectives are also important when feeding a dog with CRI.

SLOWING DISEASE PROGRESSION

- Phosphorus excretion is reduced in CRI, potentially leading to secondary renal hyperparathyroidism, hyperphosphataemia, calcium and vitamin D derangements, vascular calcification, and metabolic bone disorder². This contributes to the progression of disease. **Dietary restriction of phosphorus** is vital in preserving renal structure and function and slowing the progression of renal damage³
- The **survival of dogs** with CRI is significantly **increased** by restricted phosphorus diets, and IRIS (International Renal Interest Society) recommends phosphate restriction starting at Stage 2 disease, with different realistic target serum concentrations dependent on the Stage³
- There is evidence in dogs that supplementation with **omega-3 fatty acids** may help reduce glomerular hypertension, increase renal blood flow and minimise renal inflammation thereby slowing progression of the disease⁴
- **Oxidative stress** may be harmful in CRI, and may contribute to the progression of canine CRI. This effect can be ameliorated by antioxidant supplementation, thus again helping to preserve renal function⁵

1. Bartges JW. (2012) Chronic kidney disease in dogs and cats. *Vet Clin North Am Small Anim Pract.* **42**: 669-92.
2. Slatopolsky E. (2011) The intact nephron hypothesis: the concept and its implications for phosphate management in CKD-related mineral and bone disorder. *Kidney International Supplement.* S3-8.
3. International Renal Interest Society – www.iris-kidney.com
4. Brown SA, et al. (1998) Is there a role for dietary polyunsaturated fatty acid supplementation in canine renal disease? *J Nutr.* **128**: 2765-7.
5. Brown SA. (2008) Oxidative stress and chronic kidney disease. *Vet Clin Small Anim;* **38**: 157-166.

IMPROVING CLINICAL SIGNS

- The declining GFR (glomerular filtration rate) in dogs with CRI leads to an accumulation of a wide variety of waste products that contribute to uraemic signs
- While **protein restriction** has no proven effect on progression of CRI, moderate reduction of non-essential amino acids will result in decreased production of uraemic toxins, and consequent nausea and other adverse impacts of uraemic toxins. Dietary protein restriction is also an essential component of managing proteinuria.
- **Protein levels must be adequate** to supply the needs of the CRI patient to avoid catabolism of body proteins and an increased morbidity
- Addressing the **acid:base balance** is important as metabolic acidosis is common in CRI and can contribute to signs such as anorexia, lethargy, vomiting, weakness, and weight loss
- Sodium retention and extracellular volume expansion may occur with advanced CRI and may contribute to development of systemic hypertension. **Mild sodium restriction** may help reduce this risk
- Increased losses of **B vitamins** may occur with the diuresis associated with CRI, which may also contribute to clinical disease

* CLINICAL ADVANTAGES WITH USE OF CANINE NF RENAL FUNCTION™ IN DOGS WITH CRI

PURINA® PRO PLAN® VETERINARY DIETS NF Renal Function™ is carefully formulated to provide for the specific needs in canine CRI:

Restricted phosphate concentrations



Added omega-3 fatty acids and antioxidants



Controlled levels of high quality protein

Enhanced levels of B-complex vitamins



Added potassium citrate and calcium carbonate to combat acidosis



Moderate sodium restriction