



# News from Research

## Intro



France Garnier,  
head of Royal Canin Research & Development

### Spread Knowledge

Innovation and moving science have been at the heart of Royal Canin since its foundation by Dr Jean Cathary more than 40 years ago. Last year, thanks to the Royal Canin Research team, the people in the field observing everyday dogs and cats, our strong collaborations with experts (vets, nurses, breeders...) and vet universities, and last but not least thanks to a close relationship with the Waltham Centre for Pet Nutrition, we have been able to produce more than 40 scientific references including posters, lectures

in international congress' and of course scientific articles published in reputable scientific journals.

The science means nothing unless it is shared with you. The first issue of "News from Research – Royal Canin" is the first step in our strong commitment to spread this updated knowledge on health nutrition and vet medicine coming from studies conducted in partnership with Royal Canin.

Enjoy it!

## Hypoallergenic Hydrolysed proteins: not only for skin!

### Clinical status of dogs with chronic small bowel enteropathy is improved long term with hypoallergenic diet.

A randomised, positive control study was conducted to compare the efficacy of a hydrolysed protein diet (Royal Canin Hypoallergenic) with a highly digestible diet (Royal Canin Intestinal). This field trial included 26 dogs referred for chronic gastrointestinal diseases after a complete diagnostic investigation to eliminate other causes of chronic enteropathy syndrome (such as systemic disorders, infectious diarrhoea, partial obstruction of the intestinal tract...). Diagnostic investigation included a complete blood count, a serum biochemistry profile, serum TLI immunoreactivity, fecal examination, abdominal radiography and ultrasonography, and a gastrointestinal endoscopy, during which multiple mucosal biopsies were performed. The dogs were randomly allocated in the control diet (8 dogs) and the test diet (18 dogs). Owners were instructed to feed exclusively with the chosen diet after a transition period. No other medication was given in the duration of the study.

Cases were reassessed three times (T0 + 2-3 months, T0 + 6-12 months, T0 + 3 years). Outcome measures included subjective response to therapy (no response, complete, partial), severity of gastro-intestinal signs (score based upon CIBDAI\*) and need for other therapy.



The majority of dogs had responded by first evaluation (T0 + 3 months), with no difference between the two groups. However, at the second and third evaluation, significantly more of the test diet dogs had remained asymptomatic than those on the control diet.

*Further, the decrease in CIBDAI was significantly greater in dogs on the test diet, showing that hydrolysed diet is highly effective for long-term management of chronic enteropathies in dogs.*

### Criteria for assessment of the Canine inflammatory disease activity index (CIBDAI)

- A. Attitude / activity
  - B. Appetite
  - C. Vomiting
  - D. Stool consistency
  - E. Stool frequency
  - F. Weight loss
- Score 0-3**  
 0 = normal  
 1 = mild change  
 2 = moderate change  
 3 = severe change

Summation of 6 variables

Total Composite CIBDAI Score

0-3	4-5	6-8	9 or greater
Clinically insignificant disease	Mild IBD	Moderate IBD	Severe IBD

Mandigers PJ, Biourge V, Van Den Ingh TS, Ankringa N, German AJ. A randomized, open-label, positively-controlled field trial of a hydrolyzed protein diet in dogs with chronic small bowel enteropathy. Journal of Veterinary Internal Medicine 2010 24(6):1350-7

\*CIBDAI: Canine Inflammatory Bowel Disease Activity Index (Jergens et al, 2010).

A 12 months study found that there was no effect of a high sodium diet on renal and cardiovascular functions in aged cats.

Potential adverse effects of high salt diets on kidney and cardiac functions have been suggested in older cats. The objective of this blinded study was to compare the effects of two similar extruded diets, except for their salt content, on renal and cardiovascular variables in aged cats.

Table 1 Composition of the 2 diets

% AS FED	HIGH SALT*	CONTROL
Water	5.17 ± 0.31	6.85 ± 0.30
Protein	35.15 ± 0.91	33.60 ± 0.51
Fat	15.70 ± 0.75	16.10 ± 0.60
Dietary Fibers	6.65 ± 0.91	7.90 ± 0.65
Minerals	8.58 ± 0.49	6.00 ± 0.36
<b>Sodium</b>	<b>1.25 ± 0.06</b>	<b>0.35 ± 0.00</b>
<b>Chloride</b>	<b>2.16 ± 0.10</b>	<b>0.77 ± 0.04</b>
Energy (kCal ME / kg)	3969 ± 68	3975 ± 13

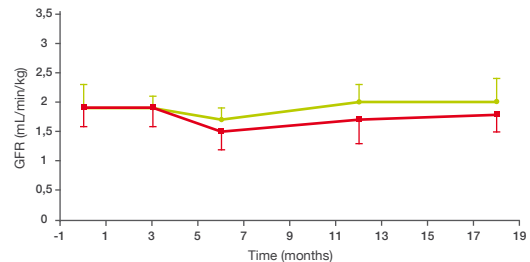
\* Feline Urinary High dilution, Royal Canin, Aimargues, France

Twenty healthy neutered cats aged of 10.1 years on the mean (+/- 2.4 years) were randomly allocated into two groups according to their glomerular filtration rate (GFR), gender, age and body weight.

One group was fed a high salt diet (1.30% sodium, 2.27% chloride as fed basis) and the other one a control diet (0.35% sodium, 0.70% chloride).

Body weight, daily urine volume, urine aldosterone, plasma urea, creatinine, PTH, renin and aldosterone, systolic/diastolic arterial blood pressures, GFR and conventional echocardiographic variables were repeatedly measured before and over 12 months after diet implementation.

Glomerular Filtration Rate over 18 months



When this poster was presented at the ECVIM congress, the GFR rates (the best marker of the renal function) were shown over a 18 month period. This chart confirms that over this period, renal function was not significantly affected by a high (1.3% Na) salt diet.

Statistics were performed on these data and no diet effect was observed on any variable, except plasma aldosterone, which was 2-4 folds lower with 1.3% vs 0.35% sodium diet, and urine volume.

**In conclusion, renal and cardiovascular functions in healthy aged cats do not appear affected by a high salt diet over a 12 month period.**

Reynolds B, Chetboul V, Elliott J, Nguyen P, Dumon H, Carlos-Sampedrano C, Testault I, Trehou E, Abadie J, Blourge V, Lefebvre HP. 1.3% (vs 0.35%)-sodium diet has no effect on renal and cardiovascular variables in aged cats over a 12-month period. European College of Veterinary Internal Medicine. 20th Annual Congress, September 9-11, 2010, 304.



## Urinary

## Struvite stone dissolution in real life

A low RSS diet helps to quickly dissolve struvite stone in client-owned cats.

After showing the efficacy of a dry diet formulated to generate a urinary struvite Relative Super Saturation (RSS) inferior to 1 in dissolving feline struvite stones in vitro (Tournier, 2007\*), a study was conducted to assess efficacy of dry and canned Royal Canin Urinary S/O in vivo.

Seventeen client-owned cats (thirteen females and four males, all neutered) were enrolled. They were suspected to have struvite urolithiasis, based on history, abdominal radiographs, complete blood cell count, serum biochemistry, urinalysis and urine culture.

Cats were maintained in their home environment and owners were instructed to feed Urinary S/O either wet (n=8) or dry (n=9) as the exclusive diet for the duration of the study. To determine time to dissolution, radiographs and urinalysis were repeated on a weekly basis and evaluated by two board certified internists.

*Struvite stones dissolved after a median time of 19 days in cats fed the dry diet, and 16 days in cats fed the canned diet.*

### Time to dissolution

	All cats (n=17)	Dry food eaters (n=9)	Wet food eaters (n=8)
Median	18 days	19 days	16 days
Range	10-55 days	10-42 days	14-55 days



Radiographs and urinalysis were repeated to mark time of stone dissolution.

Houston D, Weese H, Evason M, Biourge V, van Hoek I. 2011. A diet with a struvite relative supersaturation less than 1 is effective in dissolving struvite stones in vivo. British Journal of Nutrition (In press).

\*Tournier C, Malandain E, Abouhafs S, Aladenise S, Venet C, Ecohard C, Sergheraert R, Biourge V. Struvite Relative Supersaturation: a good predictor of struvite stone dissolution in vitro. Proceedings ACVIM 2008-803

## Obesity

## Weight rebound also affects dogs

Weight regain occurs in about 50% of dogs after successful weight loss. A purpose-formulated weight management diet can significantly limit regain in the follow-up period.

Weight rebound after successful weight loss is a well-known phenomenon in humans and companion animals. This is possibly due to the fact that caloric restriction improves metabolic efficiency, reducing subsequent maintenance energy requirements (MER).

The aim of the study was to determine long-term success of a weight loss regime and factors linked with regain. Thirty-three dogs that had successfully completed a weight management programme and reached their target weight were included. All those dogs have been referred to the Royal Canin Weight Management Clinic, University of Liverpool between December 2004 and May 2009.

For weight maintenance, 16 dogs were switched to a standard maintenance diet and 17 continued with a weight loss diet (Satiety Support, Royal Canin or Obesity Management, Royal Canin) and follow-up weight checks were performed periodically.

Median duration of follow-up was 640 days. Fourteen dogs (42%) maintained weight, 3 dogs (9%) lost more than 5% weight and 16 dogs (48%) gained more than 5% weight. The overall change in bodyweight was 4%, and most dogs regain less than half of

the weight they originally lost. Dogs fed a purpose-formulated weight loss diet regained less weight than those switched to a maintenance diet. At the time of follow-up, energy intake was also significantly higher in the dogs fed the standard maintenance diet.

*These results suggest that by continuing to feed a weight management diet during the maintenance phase, the risk of relapse can be significantly reduced.*

Criterion	Weight loss diet (n=17)	Standard maintenance diet (n=16)
<b>Gender</b>	Neutered male (11) Neutered female (6)	Male (1) Neutered male (8) Neutered female (7)
<b>Age</b>	72 months (19 to 126)	78 months (19 to 110)
<b>Change from optimal weight</b>	1% (-7 to 27)	7% (0 to 31)
<b>Follow-up duration</b>	701 days (140 to 1216)	485 days (224 to 1564)
<b>Status at follow-up</b>	Lost: n=3 (18%) Stable: n=11 (64%) Gained: n=3 (18%)	Lost: n=0 (0%) Stable: n= 3 (19%) Gained: n=13 (81%)

German AJ, Holden SL, Morris PJ, Biourge V. Long-term follow-up after weight management in obese dogs: the role of diet in preventing regain. The Veterinary Journal. 2011, May 11.

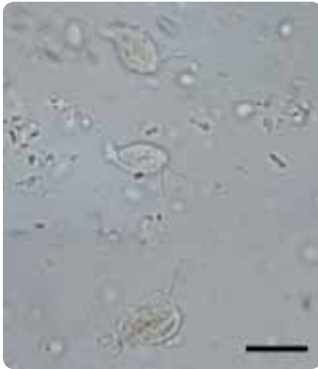
This is the prevalence of *Tritrichomonas* in French kennel puppies.

In recent years *Tritrichomonas foetus* (TF) has been reported as a naturally occurring pathogen of the large intestine of domestic cats. Both natural and experimental infections in cats with TF have been associated with large bowel intestinal diarrhoea.

This protozoa has already been identified in young puppies with diarrhoea\*. However, prevalence of TF in puppies has never been described. The objective of this survey was to estimate the prevalence of TF in puppies from French breeding kennels. Fresh voided faecal specimens were prospectively obtained from 239 puppies of 25 different breeding kennels.

For each puppy faecal quality was scored using a 15-points numerical scale. Detection of TF was done by culture using a commercially available system "In Pouch™ TF test" (BioMed Diagnostics, Oregon USA).

Motile trophozoites observed in the "In Pouch™ TF Test"



Prevalence of TF was 17.2 % for puppies. 31.8 % of puppies had gastrointestinal troubles. Puppies infected by TF had significantly more digestive problems.

TF is difficult to distinguish from *P. hominis* and *Giardia* spp, but the culture media used in this study did not support growth of these two protozoa. However, the types of trichomonas for which puppies are hosts and the specificity of the culture system with regard to detection of these other types of trichomonas are unknown. An identification of the culture system isolates is in course.

The high prevalence of TF can be explained by the age and origin of dogs (puppies from kennels).

*TF infected breeding kennels are common and contain a significantly larger number of puppies with diarrhoea.*

Grellet A, Bickel T, Polack B, Boogaerts C, Casseleux G, Biourge V, Grandjean D. Prevalence of tritrichomonas foetus in puppies from french breeding kennels. Proceedings of the ECVIM 2010 Toulouse. \*Gookin JL et al. Molecular characterization of trichomonads from feces of dogs with diarrhea. J Parasitol. 2005 Aug;91(4):939-43



## International Events

7<sup>th</sup> World Congress  
of **Veterinary Dermatology**  
VANCOUVER JULY 24-28 • 2012

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7<sup>th</sup> WORLD CONGRESS OF  
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