

***S* Miniature Schnauzer**



***Tailor made
nutrition
for the
Miniature
Schnauzer***

***Royal Canin scientific research:
innovation in Health Nutrition***

INTRODUCTION

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In terms of size and weight, the canine species is the animal kingdom's most diverse. From the Chihuahua, which weighs in at around two pounds (less than a kilo) to the St Bernard, which can tip two hundred pounds (or over 90 kilos), the weight ratio scale goes from 1 to 100, compared with two to three in cats or humans. That is why, since day one, Royal Canin's mission has been to offer nutritional solutions for each and every

dog, based on its age, its size or its breed, its physiology and its lifestyle – the four fundamental parameters of Health Nutrition.

These weight differences are accompanied by anatomical and physiological differences, which is why we segment our range according to the age and size of the dog. Fully convinced that knowledge is the mother of nutritional precision, our Research and Development Center has been responsible for major scientific innovations, some of them global in scale. They have enabled the formulation of specific foods for dogs that provide all the nutrients essential to their equilibrium, health and longevity. As Hippocrates said, 'Let food be your first medicine'.

A new step was taken four years ago, when an in-depth study of select breeds identified particular sensitivities that go well beyond size. When it comes to the Miniature Schnauzer, it is now well established that its urinary function requires a lot of attention, as does its coat and its dentition, to help the dog remain in peak form throughout its life. Likewise, it is important that the dog retains a healthy weight and avoids any excess in its diet, to avoid overloading its digestive system.

Reading this brochure, it will become clear that many other particularities have been taken into account in the formulation of the precise nutritional program for the Miniature Schnauzer. It has been written to explain how committed Royal Canin is to perfecting its personalized nutritional approach.

Guided by a passion for dogs and the desire to formulate food that is also beneficial to their health, it is a constant challenge for Royal Canin to satisfy the nutritional needs of dogs as different as the Yorkshire Terrier, the German Shepherd, the Labrador, the Poodle, the Dachshund, the Boxer, the English Bulldog, the Chihuahua, the Shih Tzu and now the Miniature Schnauzer.

Given this commitment, we are particularly delighted to make this specific and exceptional food available for Miniature Schnauzers.

In doing so Royal Canin remains faithful to its commitment to show genuine respect for dogs.



*Alain Guillemain
Chief Executive Officer
Royal Canin Group*



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THE MINIATURE SCHNAUZER...

KEY POINTS

**1 INCREASED INCIDENCE
OF URINARY STONES**

**2 A WIRY COAT THAT MAY HIDE
A SENSITIVE SKIN**

**3 A LIPID METABOLISM
THAT CAN BE DISRUPTED**

**4 TEETH AND JAWS THAT DEMAND
PROTECTION**

THE MINIATURE SCHNAUZER:

Specific nutritional solutions



1 Limiting the risk of uroliths (p. 8)

- Limiting the presence of calcium oxalate precursors
 - Creating conditions that work against the formation of struvite stones
 - Stimulating water intake and diuresis
-



2 Nutritional support for healthy skin and beautiful hair (p. 12)

- Strengthening the effectiveness of the skin barrier
 - Preventing the reddening of the coat
 - Protecting cells from aging
-



3 Regulating lipid metabolism (p. 16)

- Limiting the risk of hyperlipidemia
 - Protecting the pancreas
 - Maintaining a healthy weight
-



4 Slowing down the development of dental tartar (p. 20)

- Encouraging the dog to chew
- Combating the mineralization of dental plaque
- Controlling oral flora

1 Increased incidence of urinary stones

Sediment sometimes accumulates in a dog's urinary tract. This sediment consists of microscopic crystals that can combine to form stones. Most stones are found in the lower urinary tract (ureter, bladder or urethra), but in the Miniature Schnauzer they can also form in the kidneys (Ling & coll, 1998).

Urolithiasis are more commonly found in small dogs (Lulich et al, 2000) and the Miniature Schnauzer is one of the most affected breeds. The risk is 7.7 times greater than it is in the average canine population (Purdue VMDB, 2001).

Male Miniature Schnauzers are most likely to develop calcium oxalate stones, while the females are almost as likely to form calcium oxalate stones as struvite stones (Houston, 2004), which is a particularity of the breed. Urate uroliths are also found in the Miniature Schnauzer: in 85% of cases the affected subject is a male dog (Ling, 1998; Lulich, 2000).

The Miniature Schnauzer has a higher exposure to uroliths than large dogs, like Labradors, for several reasons. The urine volume is relatively low, miction is less frequent and consequently the urine remains in the bladder longer (Stevenson & Markwell, 2001).

Differences observed in the urine of 8 Miniature Schnauzers and 8 Labrador Retrievers

(adapted from Stevenson et al, 2001)

| | |
|--|--|
| Urine volume (mL/kg BW ^{0.75}) | Miniature Schnauzer (12 ± 3) < Labrador (22 ± 15) |
| Frequency of miction / day | Miniature Schnauzer (1.5 ± 0.5) < Labrador (2.9 ± 1.1) |
| Urine pH | Miniature Schnauzer (6.52 ± 0.18) > Labrador (6.14 ± 0.34) |

Struvite stones are often formed secondary to a urinary infection. These infections cause the proliferation of bacteria that use the urea in the urine, producing ammonia, which alkalinizes the urine pH. This creates the conditions necessary for the formation of struvite stones or magnesium ammonium phosphates. A long-term treatment of specific antibiotics generally clears up the infection and the urolithiasis at the same time (Rinkardt, 2004). The Miniature Schnauzer may have a higher exposure to urinary infections than other dogs, as its local immune defenses are sometimes reduced (Klausner et al, 1980).

Distribution of the main stones observed in the Miniature Schnauzer by sex

Study of 2381 stones by the Canadian Veterinary Urolith Center
(February 1998 – April 2003) (Houston, 2004)

| Sex | Calcium oxalate | Struvite |
|---------|-----------------|----------|
| Males | 89.6 % | 3.4 % |
| Females | 47.2 % | 41.4 % |

Females tend to develop struvite stones (80% of cases), but in the Miniature Schnauzer the likelihood of calcium oxalate stones being formed is just as high.



Calcium oxalate

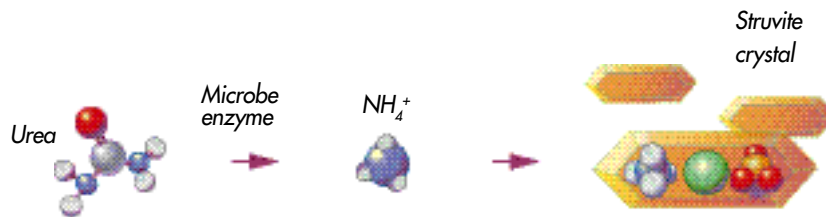


Struvite

© Waltham Centre for Pet Nutrition

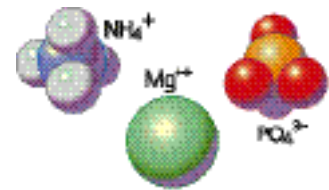
The role of urinary tract infections in struvite urolithiasis

(Source: P. Markwell)



During a bacterial infection the microbial enzymes produce ammonia, which causes the urine to alkalinize. The phosphate and ammonium ions are then available for combination with the magnesium ions to form a magnesium ammonium phosphate molecule, or struvite.

Struvite molecule



NH_4^+ : ammonium ion

PO_4^{3-} : phosphate ion

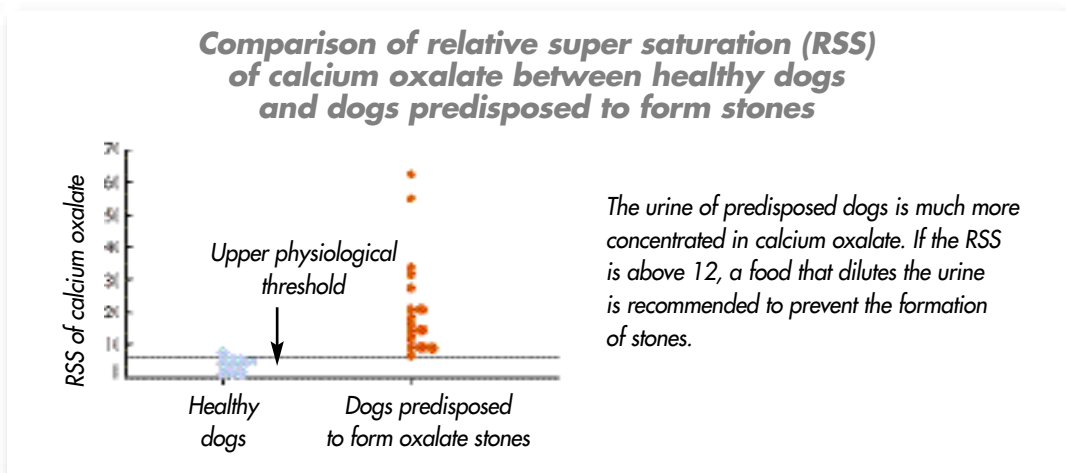
Mg^{2+} : magnesium ion

Three molecules are needed to form a struvite molecule.

Limiting the risk of uroliths

Objective #1: limiting the presence of calcium oxalate precursors

Miniature Schnauzers predisposed to calcium oxalate urolithiasis excrete more calcium in their urine than the control Beagles (Stevenson *et al*, 2003b). It is then recommended to reduce the intake of calcium in the diet. The food **Miniature Schnauzer** contains just 0.6% calcium (around 1.5 g /1000kcal). In addition, it is important to select carbohydrate sources that have low concentrations of oxalate.



Objective #2: creating conditions that work against the formation of struvite stones

Struvite or magnesium ammonium phosphate crystals are soluble at acid pH. Slightly acidifying the urine is the best way of reducing the struvite concentration in the urine and preventing this type of stone from forming.

To limit the risk of bacterial proliferation in the urinary tract, which facilitates the formation of struvite stones, it is desirable to limit the production of urea. The diet must contain highly digestible proteins to minimize the excretion of nitrogen. **Miniature Schnauzer** contains mainly LIP proteins (Low Indigestible Proteins), which are selected on the basis of their high digestibility.

Objective #3: stimulating water intake and diuresis

Whatever the type of stone, the dog must be persuaded to drink to encourage the production of more dilute urine that, accordingly, contains fewer stone precursors. There are two simple ways of encouraging water intake when the dog consumes a dry food:

- adding water before serving the food (two parts water to one part food)
- slightly increasing the food's sodium content

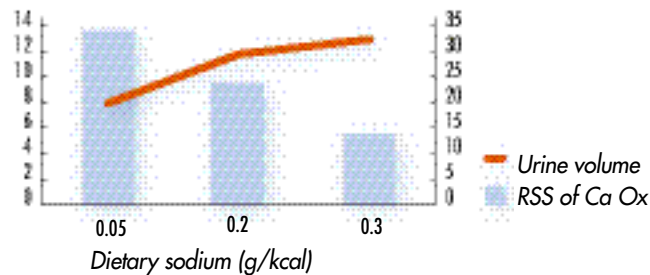
The latter solution helps reduce the risk of calcium oxalate stones to the level found in dogs that consume canned food (*Stevenson et al, 2003a*).

Effect of the sodium chloride level on the relative super saturation (RSS) of calcium oxalate and urine volume in Miniature Schnauzers

(from *Stevenson et al, 2003 a*)

RSS of calcium oxalate (Ox Ca)

Urine volume (mL/kg of weight)



Miniature Schnauzer

contains 1% sodium, which provides 0.24 g of sodium per 100 kcal. This level helps obtain an RSS of calcium oxalate below 12, under which the urine is undersaturated in calcium oxalate, which limits the formation of stones.

2 A wiry coat that may hide a sensitive skin

The Schnauzer has a wiry coat consisting of a harsh covering that is long enough for its texture to be perceived and a bushy undercoat.

The hair of black dogs, like Newfoundlands and Labradors, often reddens and this phenomenon is also observed in black-haired Miniature Schnauzers. Many causes have been put forward to explain this depigmentation (*Busch-Kschiewan et al, 2004*), including endocrine diseases (e.g. hypothyroidism), environment (pollution, UV rays) and diet. Nutrition can in any event optimize the appearance of the coat's natural color by providing essential precursors to the synthesis of melanin, the pigment responsible for coloration of skin and coat.



© Labat

The Miniature Schnauzer must be groomed very regularly: the skin can be irritated every time the underhair is removed or the covering hair is clipped. Sometimes the result is squama (dandruff).

Another particularity with respect to hair color is gilding syndrome, or aurothrichia. Affected dogs are young (2 to 3 years) and spread evenly between the sexes. The black and silver hairs on the back and abdomen gradually turn golden without there being any signs of illness. This disease is found only in Miniature Schnauzers. In a study of 18 subjects, eight of the dogs share common ancestors and 55% reverted to their original color within two years without any special treatment (*Scott et al, 2001*).

The Miniature Schnauzer is sometimes affected by atopic dermatitis, which causes pruritus, or itching, especially on the face and the extremities. Otitis externa, or inflammation of the outer ear, is often one of the clinic signs. This disease is an expression of hypersensitivity in some dogs to allergens in their environment.

Everything that strengthens the skin barrier promotes the health of the coat and the beauty of the hair. The Miniature Schnauzer sometimes suffers from diabetes, hypothyroidism, or liver diseases that can cause skin lesions.



© Labar

black



© Yana G. Philippova

salt & pepper



© Labar

gilded black



© Katerina Cechova

pure white

The different colored coats found among Miniature Schnauzers are pure black with black undercoat, salt and pepper (charred sand) and gilded black. Pure white with white undercoat is now accepted by the International Canine Federation (FCI).

Nutritional support for healthy skin and beautiful hair

Objective #1: Strengthening the effectiveness of the skin barrier

Repetitive grooming actions stimulate the renewal of the upper layer of the epidermis. That means it is essential the skin is maintained and nourished optimally to keep it healthy.

Studies conducted by the Waltham Research Centre shows that some nutrients (nicotinamide, pantothenic acid, histidine, inositol and choline) improve the skin's resistance to dehydration. The effect is obtained by stimulating the synthesis of ceramides, lipid molecules that form a kind of cement between cells (*Watson et al, 2006*).

The coat's black pigmentation depends on the presence and the spread of eumelanin pigments in the hairs.

It takes around two months for the beneficial effect of administering this complex to be felt, due to the time needed to differentiate the cells of the epidermis. Atopic dogs are actually more receptive to bacterial skin infections (*Inman et al, 2001*). Strengthening the effectiveness of the skin barrier helps reduce the skin's vulnerability to penetration by allergens, while also limiting bacterial and fungal colonizations.

Miniature Schnauzer also contains omega 3 fatty acids (EPA and DHA) that calm skin irritations.

Objective #2: Preventing the reddening of the coat

The synthesis of eumelanin, the pigment responsible for the black coloration of hair, is dependant on intake of amino acid precursors (phenylalanine and tyrosine). Problems with tyrosine and phenylalanine intake in dark-haired animals may provoke a reddening of the coat.



Work on black Newfoundland and Labrador puppies (Biourge & Sergheraert, 2002) shows that the levels needed to guarantee optimal coat pigmentation in dogs are twice as high as the minimal needs for optimal growth. Supplementing food with tyrosine also helps increase the intensity of the coat's color.

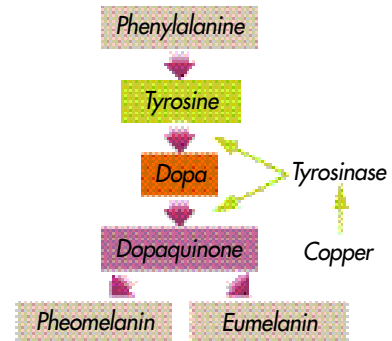
Objective #3: Protecting cells from aging

The skin and coat sometimes reflect the general aging of the organism at an early stage. At 12-14 years, the Schnauzer's average life expectancy is fairly high. There are many nutrients that can reinforce the aging dog's sometimes inadequate natural defences to offer maximum protection to the cells from attacks by free radicals.

Antioxidants help the organism combat the destructive effects of free radicals – their scientific term is 'oxygen-reactive species' – produced continuously by the organism. The most effective antioxidants are:

- **Vitamin E**, which protects membrane lipid structures.
- **Vitamin C**, which promotes the regeneration of vitamin E.
- **Lutein**, which stabilizes cell membranes.
- **Green tea polyphenols**, which have an antioxidant effect in the cells themselves, protecting the DNA of the nucleus.
- **Taurine**, which is an amino acid essential to the retina that participates in the cells' antioxidant defenses.

Role of tyrosine in melanin synthesis



Tyrosine is either provided directly in the diet or synthesized from phenylalanine. It is also a precursor of molecules involved in the reproduction function. A tyrosine supplement accordingly has a positive effect on fertility.

Antioxidant defenses

UV rays

Pollution

Stress

Poor nutrition





Antioxidants protect the cell membranes and nucleus against free radicals.

3 A lipid metabolism that can be disrupted

The Miniature Schnauzer's sensitivity to diseases that involve lipid metabolism has been observed in several clinical studies. These diseases include hepatic lipidosis, pancreatitis (*Simpson, 2006*) and some forms of hyperlipidemia (*Schenck, 2006*).

- 1 With an odd ratio of 55 (*Purdue VMDB, 2001*), pancreatitis (inflammation of the pancreas) is the number one pathological risk facing a Miniature Schnauzer, ahead of diabetes. The risk is especially high in overweight dogs over five years of age. The consumption of very high-fat rations sometimes precedes the development of clinical signs of pancreatitis in dogs (*Hess et al, 1999*).
- 1 Hyperlipidemia (excess lipids in the blood, even when the dog has fasted) can take several forms depending on the type of excess lipids: cholesterol, triglycerides or lipoproteins.

Predominance of selected lipoproteins by species

| "Mammals with LDL"  | "Mammals with HDL"  |
|---|--|
| Humans and most apes | Dog |
| Rabbit | Cat |
| Hamster | Horse |
| Guinea Pig | Ruminants |
| Pig | Rat |
| Camel | Mouse |
| Rhinoceros | Most other mammals |

Lipoproteins are classed according to density. Contrary to humans, dogs have a preponderance of 'good cholesterol' (HDL), which makes them resistant to the development of cardiovascular diseases.

LDL : Low Density Lipoproteins

HDL : High Density Lipoproteins

- **Cholesterol** sometimes accumulates along the inner wall of blood vessels, narrowing their diameter. This is known as atherosclerosis, a rare disease in dogs, although the Miniature Schnauzer is one of the breeds that appears to show a higher prevalence (*Liu et al, 1986*).
- Fasting **hypertriglyceridemia** is the major abnormality observed in hyperlipidemia in the Miniature Schnauzer.
- **Lipoproteins** are the primary carriers of triglycerides and cholesterol in the blood. Hyperlipoproteinemia is the term used when these lipoproteins exceed a certain threshold. While all breeds can be affected, the Miniature Schnauzer appears to present the highest frequency of primary hyperlipoproteinemia episodes, which means that it is not associated to diabetes or hypothyroidism. It may actually be due to an enzyme deficiency, preventing normal lipid use by the cells (*Jaeger, 2003*).

While many patients do not show any clinical signs (*Whitney et al, 1993*), in the long run the excess of lipids in the blood leads to excessive stimulation of the pancreas and inhibits the secretion of insulin (*Prentki et al, 1996*). Hyperlipidemia is accordingly a potential risk factor with respect to diabetes mellitus, pancreatitis and hypothyroidism. The diabetes is reversible if the hyperlipidemia is corrected (*Mingrone et al, 1999*).

Appearance of normal serum and hyperlipidemic serum



Normal serum must be transparent, without showing any signs of turbidity (left). A hazy serum in a fasting dog indicates the presence of excess lipids (right).



© Yana G. Philippova

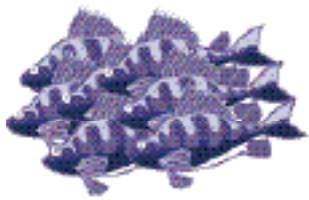
Miniature Schnauzers appear to present a higher incidence of primary hyperlipoproteinemia. No breeds are unaffected however.

Regulating lipid metabolism

Objective #1: limiting the risk of hyperlipidemia

The interest of an omega 3 fatty acid (EPA-DHA) supplement has been widely shown in the treatment of hyperlipidemia in several species. Generally speaking, a fish oil supplement helps obtain a reduction of cholesterol and triglyceride in the blood (*Okumura et al, 2002*) and of the free fatty acid concentration in the blood (*Singer et al, 1990*), which can be of importance in preventing pancreatitis and diabetes.

Fish oil and omega 3 fatty acids



Fish oil is a concentrated source of long chain omega 3 fatty acids (EPA and DHA). A fish oil supplement proves to be very effective in dogs suffering from hyperlipidemia.

The beneficial effects of EPA-DHA are particularly attributed to the reduction in the intestinal absorption of glucose and lipids (*Thomson et al, 1993*) and the increased secretion of cholesterol in the bile (*Smit et al, 1991*).

The presence of fructo-oligosaccharides in the diet is desirable, as fermentable fibers have a positive effect on the level of triglycerides and cholesterol in the blood of a dog (*Diez et al, 1997*).

Objective #2: protecting the pancreas

An oral antioxidant treatment combining vitamin E, vitamin C, β -carotene, selenium and methionine has helped prevent the recurrence of pancreatitis in several patients suffering from inherited lipoprotein lipase deficiency, causing a state of hyperlipidemia (*Heaney et al, 1999*).

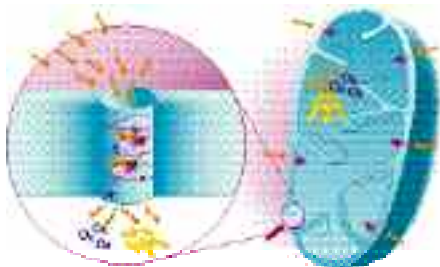
Objective #3: Maintaining a healthy weight

As a risk factor for hyperlipidemia, pancreatitis and diabetes, obesity must be prevented through an appropriate nutritional approach. A diet with a moderate fat content is recommended, to limit the risks of energy overconsumption. **Miniature Schnauzer** also contains L-carnitine, which facilitates the transport of fatty acids into the mitochondria (diminutive power stations located in the cells), where they are oxidized. L-carnitine is unfavorable to the storage of fats.

The formulation of the food is not the be all and end all however. To avoid weight gain the ration should also be adjusted to the dog's lifestyle. It is especially important to monitor the quantities served to a neutered dog or a dog with an urban lifestyle. The rationing tables for **Miniature Schnauzer** provide specific recommendations for animals at risk of obesity, especially when they live an indoor life.



The role of L-carnitine



L-carnitine facilitates the burning of fats as cell fuel.

4 Teeth and jaws that demand protection

A survey of 30,000 dogs examined in veterinarian consultation in the USA shows that periodontal disease (inflammation of the tooth supporting tissue, the periodontium) is found in at least one dog in five (Lund, 1999). Small dogs are more frequently affected (Borissov, 1999), undoubtedly due to their long life expectancy, which gives the disease time to develop.

Periodontal disease is the result of a battle between the bacteria that accumulate on the dental crowns (bacterial dental plaque) and the individual's defense system. A milligram of dental plaque contains around 10 million bacteria (Loesche, 1988). These bacteria provoke an inflammatory reaction of the gum, known as gingivitis. It can also gradually cause deeper lesions (destruction of the gum, lesions of the alveolodental ligament and lesions of the alveolar bone that supports the tooth). These deep lesions loosen the tooth and characterize the stage of periodontitis.

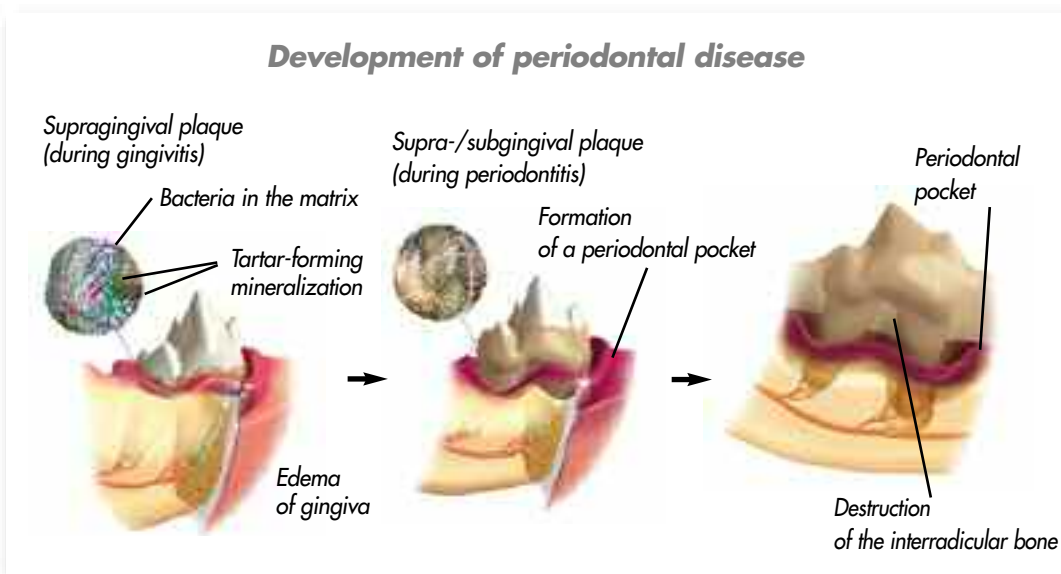
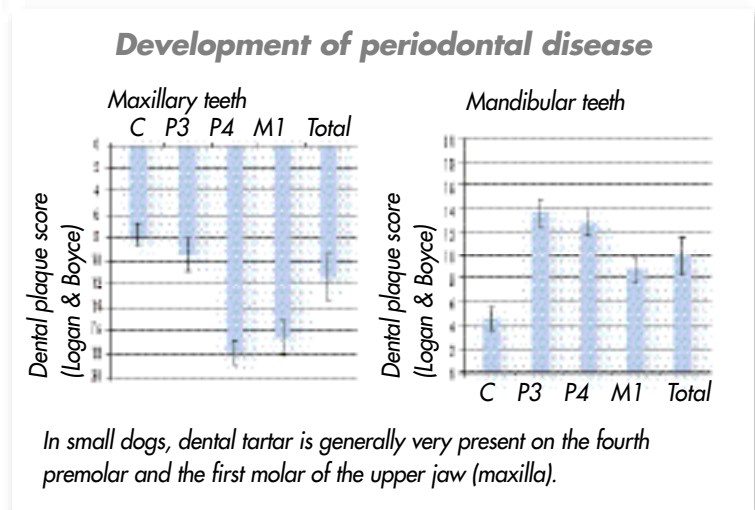
Periodontal disease affects all dogs in the course of their life, but the degree varies depending on breeds and individuals: dogs weighing less than 22 pounds are affected earlier and more seriously (Harvey et al, 1994). Periodontal disease obviously worsens with age.

The Miniature Schnauzer has scissor-action jaws, well developed masseters and a rectangular skull.

Some factors common in small dogs (reduced mastication, dental malocclusion, persistence of milk teeth, absence of oral hygiene) can facilitate the accumulation of dental tartar on the teeth.

Tartar is formed by the progressive mineralization of the dental plaque by the action of mineral salts (especially calcium) in the saliva or the crevicular fluid.

Tartar is not responsible for periodontal disease but its rugged surface is ideally suited to the continuous formation of bacterial dental plaque. During periodontal disease, the tartar is indissociable from bacterial dental plaque. Limiting the formation of tartar while curbing the formation of dental plaque is one of the goals of oral hygiene.



Slowing down the development of dental tartar

The ergonomics and texture of the kibble has been studied on the basis of the Miniature Schnauzer's particular dentition and jaws.



In the interests of keeping the Schnauzer's beard clean, the kibble should not crumble during chewing.

Objective #1: encouraging the dog to chew

As a general rule, the dog presents an increased accumulation of dental plaque and tartar, and a more severe form of gingivitis, when it is fed a soft, sticky food compared with a hard, fibrous food (*Egelberg, 1965*). This advantage in favor of a hard and fibrous food is present when this food is given in pieces that are sufficiently voluminous to get the dog to use its teeth.

Dogs that have a lot of things to chew on have less tartar and less gingivitis than those that do not.

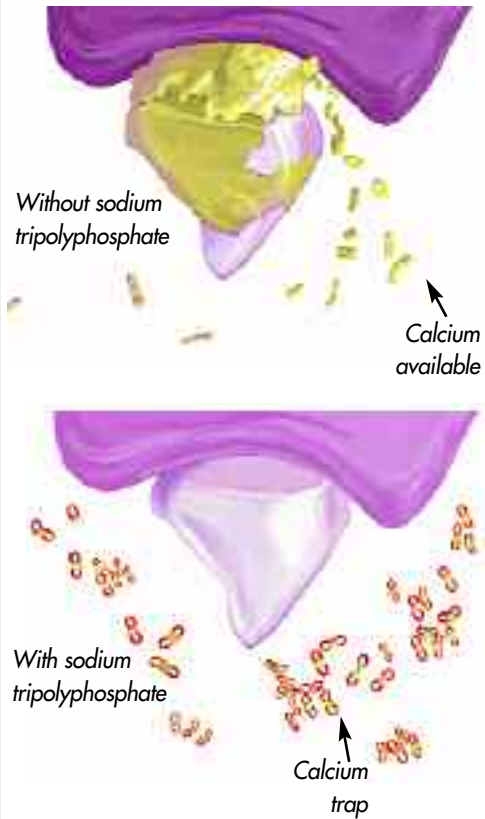
The kibble's shape and texture has been specially studied to get the dog to chew, thus obtaining a gentle abrasive effect on the teeth. By chewing the dog ensures that the dental crowns come into contact with the hard surface of the kibble, which limits the accumulation of dental tartar.

Objective #2: combating the mineralization of dental plaque

The calcium ions in saliva play a direct role in the calcification of the dental plaque to form a tartar deposit. Sodium polyphosphates are calcium chelating, or binding agents. The calcium ion is temporarily trapped in the saliva, making it unavailable for tartar formation. It is subsequently released in the digestive tract, where it is absorbed according to the needs of the organism.



Action of sodium tripolyphosphate



Once they have been chelated by the polyphosphate molecules, the calcium ions are no longer available for mineralization of the dental plaque to form tartar.

Objective #3: controlling oral flora

Some sources of polyphenols can be usefully incorporated in the food so as to limit the formation of the dental biofilm. In dogs, a diet formulated with green tea, which is naturally rich in catechines, has helped inhibit the growth of specific bacteria (*Porphyromonas*) involved in periodontal disease. After two months, the percentage of *Porphyromonas* in the microbe population of the dental plaque of dogs is significantly reduced (Isogai et al; 1995, 1992).

Role of polyphenols



Sources: polyphenols can be extracted from green tea and grapes

Rich in active polyphenols like epigallocatechin gallate (EGCG), green tea is considered to have a very important role to play in preventing periodontal disease.

A NUTRITIONAL PROGRAM FOR EVERY

2-10
MONTHS

GROWTH PHASE

High nutrition for the Miniature Schnauzer puppy, covering all of its growth needs

MINI junior ultra-sensitive

Mini Junior Ultra Sensitive is specially formulated for puppies that mainly live indoors, difficult puppies and puppies with highly sensitive digestive systems.



Proteins selected upon their exceptional digestibility (> 90%) to reduce the production of fermentable substrate in the colon.



Raw materials and aromas specially selected to please even the most difficult puppies.



A patented antioxidant complex blended with fermentable fibers (mannan-oligosaccharides, MOS) stimulates the production of antibodies in the puppy.



MINI junior



Energy concentration, excellent digestibility and reduced starch facilitate digestive tolerance, ensure regular digestive transit and promote balanced intestinal flora.



Raw materials and aromas specially selected.



Kibble shape and texture adapted to the jaw strength and tooth size of small-breed puppies.



A patented antioxidant complex blended with fermentable fibers (mannan-oligosaccharides, MOS) stimulates the production of antibodies in the puppy.



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For birth and weaning of the Miniature Schnauzer

1st Age Milk : to complement or replace the bitch's milk (from birth to week 5).

Starter Puppy : for optimal weaning of Miniature Schnauzer puppies (from week 5-8, a delicate period characterized by the 'immunity gap'). This food is also recommended for Miniature Schnauzer bitches at the end of pregnancy and lactation.



PHASE IN THE LIFE OF A MINIATURE SCHNAUZER

FROM
10
MONTHS

ADULTE AND MATURE PHASES

Miniature **SCHNAUZER**

**Best balance nutrition
exclusively formulated
for the Miniature Schnauzer.**



© Hermeline



Limits the formation of urinary stones by encouraging the formation of slightly acidified, diluted urine

Contraindication

Starter food is recommended from week 5 of pregnancy. Starter is better adapted to the pregnant bitch's special calcium and energy needs in the reproduction period. Starter is also recommended during lactation, until weaning.



Preserves a healthy weight through a low fat content and the presence of L-carnitine to encourage the burning of fatty acids



Ensures hair beauty and skin health through a complex that strengthens the effectiveness of the skin barrier and the inclusion of antioxidants that protect the cells from free radicals



Reduces dental tartar through a kibble shape that obliges the dog to chew and the presence of sodium tripolyphosphate, which captures salivary calcium

The History of the Miniature Schnauzer...



© Lameau

Schnauzers (wire-haired), Pinschers (smooth-haired) and Affenpinschers (long-haired) are all derived from the same type, which first appeared in Germany. The Schnauzer's name comes from the German word for muzzle, 'Schnauze', due to the breed's characteristic hirsute snout. During the eighteenth century these dogs were primarily used to catch vermin.

While the original Schnauzer could be between 30 cm and 45 cm to the withers, there are now three distinct varieties: the giant (60-70 cm) – the most common in Europe – the standard (40-50 cm) and the miniature (30-35 cm).

It was no easy task to create a small breed from a heterogeneous population of dogs with wiry, soft and silky hair, whose appearance and character had to correspond to those of its big brother. Until the nineteenth century it went under

the name Wirehaired Miniature Pinscher. The Miniature Schnauzer was first presented as a separate breed in 1899, and it became the most popular of the Schnauzer breeds in the United States in the 1920s. It was also in the United States that the colors black and silver, varieties that were approved by the FCI in 1976, and more recently pure white were first selected.

Its character is inherited from the lively, full of energy and impetuous nature of its big brothers. While it does not really have the stature of a guard dog, it is a breed that is always alert and hard to impress, which makes it no less dissuasive than larger dogs. It respects a master that shows authority. A hardy dog with energy to spare, the Miniature Schnauzer is able to maintain an intense level of physical activity. It is perfectly suited to agility competitions. This devoted and affectionate dog loves to play and is very tolerant of children. Nowadays the Miniature Schnauzer is highly prized as a companion dog.

While the Miniature Schnauzer shares many common points with larger dogs, its nutritional needs must be considered from the point of view of its size. Dentition, stomach capacity, digestive performance, sensitivity to urinary stones and a long life expectancy are some of the characteristics that distinguish it from other breeds and justify a specific nutritional approach.



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The Miniature Schnauzer from the tip of...

According to the FCI classification, the Miniature Schnauzer belongs to Section 1 of Group 2, which covers Pinschers and Schnauzers. (Miniature Schnauzers do not undergo working trials.)

In the United Kingdom, Australia and New Zealand, the Kennel Club places the Miniature Schnauzer in the Utility dogs group. In the United States and Canada it is in the Terriers group.

General Appearance

Small, sturdy, stocky rather than slender, the Miniature Schnauzer is a compact version of the Standard Schnauzer. Its torso describes a square, as high to the withers – 30-35 cm – as it is long. It generally weighs between 4.5 kg and 7 kg.

Head and shoulders

The total length of the head corresponds to half the length of the upper part. The head must be proportional to the dog's build.

Forehead: flat and creaseless, parallel to the ridge of the nose; short face, straight nose and stop clearly accentuated by the eyebrows.

Nose: well developed and always black, with wide nostrils.

Muzzle: wide, inclined upwards, ending in a shortened angle.

Lips: black, tight against the solid jaws.

Masseters: well developed.

Eyes: oval, set forward, dark with a lively expression.

Ears: folded and hanging, set high, in a V shape; pointing up towards the temples; inside

edge positioned next to the cheeks; no docking permitted except in the United States and Canada.

Neck: firmly set, long and slightly arched. The skin of the throat is not creased.

Body

From the highest point at the withers, the line is slightly inclined backwards. Solid, short back and waist. The distance between the last costal arch and the hip is also short, giving the dog a squat appearance. The hindquarters begin imperceptibly, slightly rounded at the root of the tail.

The chest is clearly accentuated by the tip of the sternum, moderately broad, reaching down to the elbow.

With the lower part of the rib cage, the bottom describes a beautifully curved line.

Tail

Set on and carried high. Docking is still permitted in some countries.

...its toes to the end of its nose

Limbs

The highly muscular limbs must generate elegant, flexible and long movements. The forelimbs are as far forward as possible, the hindlimbs generate the power needed through larger elastic strides. The front of one rib moves forward together with the back of the next rib.

Coat

The coat consists of lush, flat, wiry covering hair long enough for its texture to be noticeable except on the forehead and the ears, where it is short. The undercoat is also harsh.

A harsh beard on the muzzle and bushy eyebrows, hiding the eyes somewhat, are typical characteristics.

Coats come in four colors:

- Pure black with black undercoat
- Salt and pepper

Pepper is spread consistently and the undercoat is grey. Nuances from dark grey to silver-grey are permitted. Whatever the colors of a particular subject, all subjects must present a dark mask that emphasizes the appearance and combines harmoniously with the colors. White or flecked hair is a fault, as is a black stripe down the middle of the back.



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(from FCI standard 183, updated in 2004)

- Silver-black

The covering hair and undercoat are black. The forehead, nape of the neck and exterior surfaces of the ears must be black. White markings under the eyes, on the cheeks, on the beard, on the throat, on the front of the chest in the form of two separate triangles, on the metacarpus, on the feet, on the inside of the forelimbs and on the anus.

Flecked hair is a serious fault.

- Pure white with white undercoat: color accepted by FCI ((not yet by the American Kennel Club nor by the Canadian Kennel Club).

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Scientific Glossary

- Atopy:** hereditary predisposition to the development of hypersensitivities to antigens in the environment.
- Calcium oxalate:** second most common cause of stones in dogs, after struvite.
- Ceramides:** skin lipids essential to the integrity of the upper layer of the epidermis.
- Diuresis:** production of urine. The more urine is produced, the more diluted it is and the lower the risk of urinary stone formation.
- EPA/DHA:** omega 3 long chain fatty acids with an anti-inflammatory action, abundant in fish oils.
- FOS (fructo-oligosaccharides):** fermentable fibers that promote the growth of a beneficial bacterial flora (lactobacilli and bifidus) at the expense of pathogenic bacteria (salmonella, clostridium, etc).
- Hyperlipidemia:** an excess of lipids in the bloodstream, leading to a blood turbidity even in fasting dogs.
- L-carnitine:** fatty acid carrier that stimulates the burning of fats. It helps get the fatty acids to the mitochondria, where energy is generated for the cells.
- LIP:** Royal Canin label guaranteeing very high protein digestibility (> 90%).
- Lipoproteins:** cholesterol and triglyceride carriers in the blood on which all tissues depend for the provision of lipids.
- Omega 3 fatty acids:** fatty acids with anti-inflammatory capacities used in dermatology. The most interesting are long chain fatty acids (EPA/DHA), which are abundant in fish oils.
- Pancreatitis:** disease of the pancreas that can provoke vomiting and abdominal pains.
- Periodontal disease:** attack on the tooth supporting tissues by the bacteria in dental plaque.
- Polyphosphates:** anti-tartar agents that capture salivary calcium.
- RSS (Relative Super Saturation):** measure of the urine concentration of some minerals that can form stones.
- Struvite:** stones that often form after a urinary infection, also known as magnesium ammonium phosphates, as they are formed from these three elements.
- Taurine:** amino acid containing sulfur, a major constituent of immune cells concentrated in the retina and the heart. Also has an anti-inflammatory action.
- Tyrosine:** amino acid, precursor to the synthesis of melanin, the pigment responsible for the color of the coat.
- Urolithiasis:** formation of stones in the urinary tract that can obstruct the elimination of urine and induce kidney failure in the absence of treatment.

Key canine innovations in the history of Royal Canin

A historic commitment to improve knowledge and respect of the needs of small, medium and large dogs.

1980

- Launch of AGR, the first food specially formulated for large-breed puppies and the first professional range for dog breeders.

1990

- Launch of the first RCCI high-nutrition foods for dogs on the specialist circuit, including PR27, specially formulated for small dogs.

1997

- Launch of RCCI Size, the world's first nutritional program for dogs that takes account of the age, lifestyle and especially the size/weight ratio of various dog breeds.

1999

- Launch of the first weaning food, Starter, for breeders.
- Launch of Vet Size, the first nutritional program for small, medium and large dogs, exclusively for veterinarians.

2000

- Launch of SIZE NUTRITION, three nutritional programs adapted to the needs and physiology of small, medium and large dogs.

2001

- Launch of GIANT, the first nutritional program specifically formulated for giant puppies (> 45 kg).

2002

- Launch of the first program to help reinforce the natural defenses of dogs in every stage of their life (MEDIUM IMMUNITY PROGRAM)

- Royal Canin innovates once again, with a tailor made food for Yorkshire Terriers: MINI YORKSHIRE 28.

2003

- Nutritional precision is harnessed in (GERMAN SHEPHERD 24 for the breed that has been the brand's emblem from the first hour and LABRADOR RETRIEVER 30 for one of the world's best-loved breeds.

2004

- The launch of the Size Health Nutrition range provides new nutritional keys for the growth stage of large and giant breeds: MAXI BABY DOG et GIANT BABY DOG.
- The launch of two tailor made foods specifically developed for two small breeds: POODLE 30 et DACHSHUND 28.
- Launch of breed specific foods for the Boxer and Bulldog: BOXER 26 et BULLDOG 24.

2005

- Two new foods in the breeding range: ANOESTRUS 22 and HT 42 D, for breeding bitches.
- GERMAN SHEPHERD JUNIOR completes the nutritional program for the German Shepherd.

2006

- Launch of a tailor made food for the Miniature Schnauzer: **MINIATURE SCHNAUZER.**

Made by Aniwa S.A.S.
on behalf of Royal Canin.
Publication: Direction
Communication Royal Canin
Group/Aimargues. France.
Editor/Supervisor:
Pascale Pibot (Scientific
Editions Manager)
Publishing contact:
Marie-Laure Rémy-Néris
Production: Diffomédia Paris.
Printed in the EU.
© Royal Canin 06/2006
Artistic direction:
Élise Langellier, Guy Rolland
Layout: Lucie Sauget
© Illustrations:
Diffomédia/Élise Langellier,
Mickaël Masure, Éric Josié
Editorial coordination:
Céline Davaze
Cover photo: Hermeline



KNOWLEDGE AND RESPECT

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