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**FVR**

# discuss

Edited by Farmina editorial Scientific Research

***SCIENTIFIC STUDIES ON THE EFFECTIVENESS  
FARMINA VET LIFE DIETS.***

## Farmina Vet Research

Farmina Vet Research Group (FVR) aims to support the veterinary in the management of some diseases commonly encountered in pets, through their effective, scientifically proven, Farmina Vet Life diets.

It also proposes to offer viable solutions to food issues, and provide scientific advice, through the collaboration with the Department of Veterinary Medicine and Animal Production - University of Naples Federico II.

Farmina Vet Research is now able to have a scientific dialogue with the veterinary world, discussing clinical issues and new products.

Farmina Vet Research, is the company's scientific area where different profiles and skills cooperate, but all working together to offer professional advice.

Farmina Vet Research, integrates with the production center studying the technological innovations to improve working processes to pursue the challenges of the future, in order to bring health and wellbeing to our faithful companions through the value of its products.

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art: G. De Sarno

## The effects of Farmina Vet Life Hairball feline formula administration.

The formation of hairballs or trichobezoars in the gastrointestinal tract is a very common and considered almost "physiological" in feline species.

Cats spend a lot of time grooming their coat and daily ingest various amounts of hair. The volume ingested each day can vary according to different factors such as the type of coat, the season, the lifestyle, the specific behavior (stereotypies due to stress).

In the shedding period the amount of ingested hair can increase considerably; and because of this, one must consider that in industrialized countries, most cats are kept, sometimes exclusively, in the house where light and environmental temperature remain almost unchanged throughout the year thus inducing constant shedding during the twelve months.

Another factor that can increase the ingestion of hair is represented by dermatitis resulting from adverse reactions to food, flea and mite infestations.

The individual strands of hair ingested, which are too light to be moved by peristaltic movements, tend to sediment and slowly conglomerate until "hair balls" are formed.

The trichobezoars are generally eliminated by the cat through vomiting, but sometimes they may continue down the intestine causing symptoms varying from constipation to intestinal obstruction with vomiting, anorexia, and abdominal tenderness.

In severe cases of intestinal obstruction surgery is often the only therapeutic solution; as regards the treatment of milder forms and preventing the formation of trichobezoars strategies most frequently used are represented by specific diets, pastes made with malt and in extreme cases laxatives and prokinetic drugs.

The aim of food treatment is to favour the constant elimination of ingested hair, avoiding accumulation in the digestive tract, this is done by facilitating gastric emptying and intestinal peristalsis.

The key in the formulation of specific diets aimed at preventing this, is represented by the contents and sources of fiber used in the formula. In particular, high fiber levels, characterized by a heterogeneous mixture of soluble and insoluble fiber are advisable. Insoluble fiber stimulates peristalsis thus increases the speed of transit of ingested material, while slowing peristalsis, on the other hand the soluble fiber in the digestive system forms a gel that facilitates the elimination of hairball with feces.

### THE EXPERIMENT

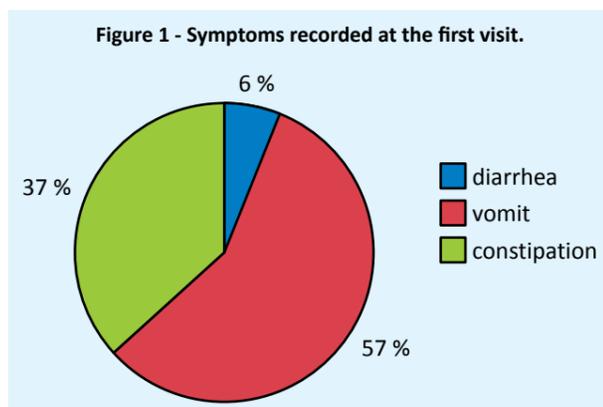
In order to evaluate the effectiveness of Farmina Vet Life Feline Hairball formula in the treatment of clinical signs associated with the presence of trichobezoars in the cat's gastrointestinal tract, a questionnaire was prepared for Italian veterinarians who took part in the research protocol.

In particular, the questionnaire was divided into four parts: the first was intended for signaling and the rest was for recording the various symptoms they came across in three visits, carried out at regular intervals during the period of use of 60 days.

A total of 55 cats were recruited (average age 6.23 years; 33 F, 20 M, 2 unrep.) who for the entire trial period were treated exclusively with Farmina Vet Life Hairball feline formula diet.

At the first visit (figure 1), the majority of the subjects (57%) showed vomiting and in 37% of cases were reported as suffering from constipation. In 10 patients (18%) the above mentioned symptoms were both present.

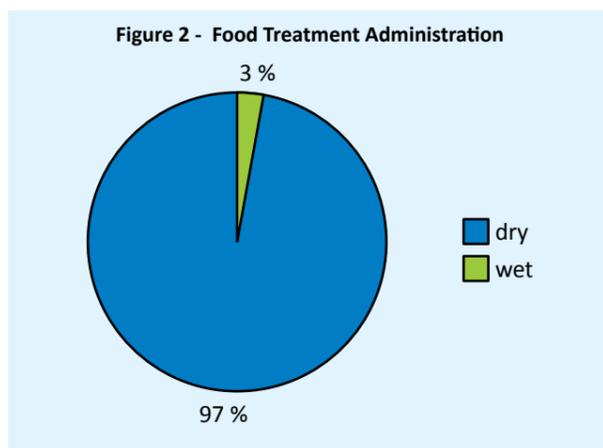
Diarrhea was present only in 3 patients and in one of them also vomiting.



Almost all subjects (97%) fed on dry food (figure 2), while the remaining fed on dry food moistened with water.

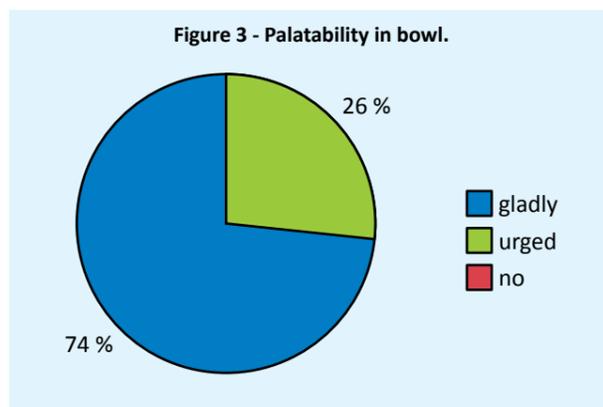
The palatability of the product proved to be high since all of the subjects ate the food (figure 3) and 74% did so willingly, without having to be pushed by the pet owner.

The diet (figure 4), recommended by the veterinarian, was between 1 and 2 months long in 74% of the cases; the duration of the therapy most frequently chosen (68%) was 2 months, and in 27% of cases a longer treatment of over two months was chosen.



The clinical visits during the study period included the assessment and monitoring of the characteristics of the feces on the basis of specific parameters (consistency, daily frequency, odor, color) and on the evaluation (characteristics and frequency) of vomiting.

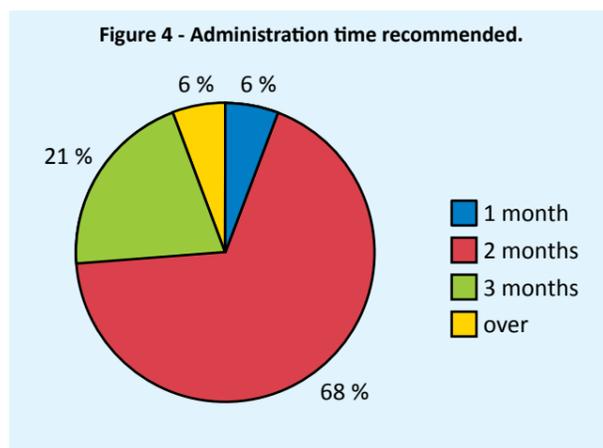
At the first visit, the fecal consistency ranged predominantly (71% of total) extremely hard to hard



(21 and 50%, respectively) and only in 4 subjects it appeared to be loose to liquid.

The presence of hairballs in fecal material was found in a moderate percentage (21%) of the patients.

Defecation frequency did not exceed three times a day in none of the subjects varying from 1 to 2 times in 75% of cases, while it was lower, less than once a day, in 25% of cases. Odor and color were very close to the norm in most cases at the first visit (74 and 92% for odor and color respectively).

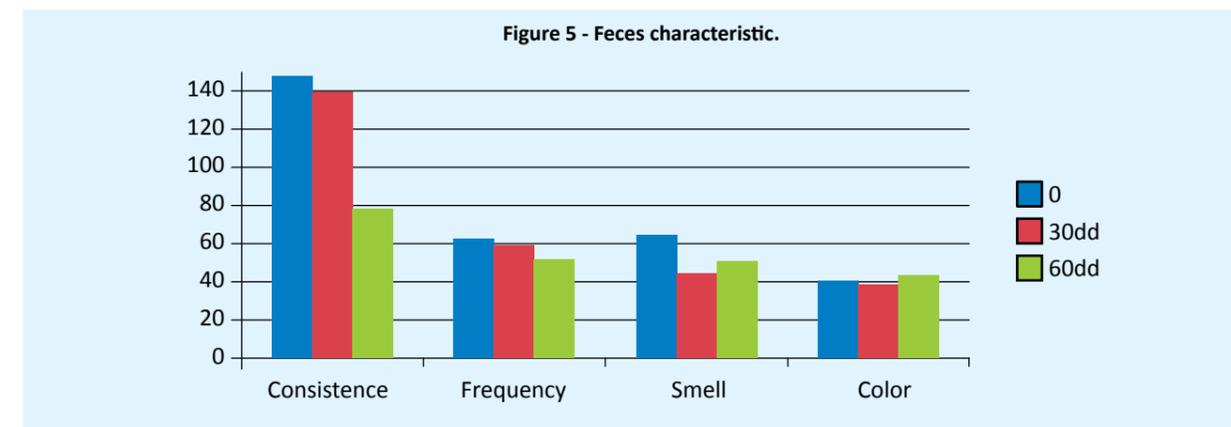


For what concerns vomiting, it was present in most of the recruited patients and was characterized mainly by the presence of hairballs (47%) and material totally or partially undigested (20 and 21%, respectively), in the remaining cases the presence of bile juices was reported.

The frequency of vomiting was sporadic in about half of the subjects while in the remaining it increased from once (42%) to more times in a day (13%).

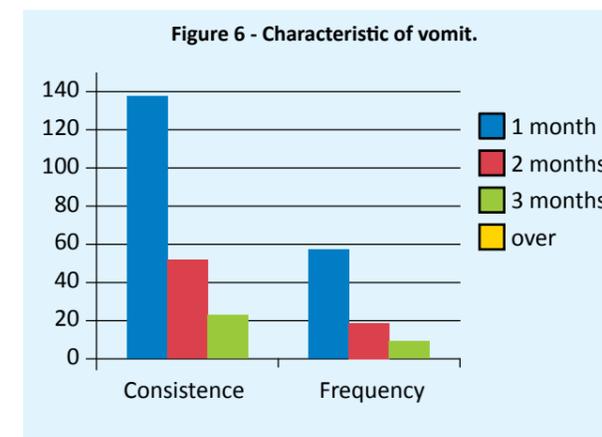
At the second visit, in 72% of subjects had well-formed stools (figure 5) and the loose consistency was reported by 15% of the owners; none of the subjects had extremely hard stool and the presence of hairballs was present in 10% of patients.

In 52% of the cases defecation frequency was twice a day, while 41% of the cases it was once a day. Only two subjects showed a different frequency: 1 more than 3 times and the other three times.



Almost all the patients (95%) defecated from 1 to 2 times per day (57% and 38%, respectively); in 5% it was equal to 3 times, while constipation was reported in none of the cases. The smell and the color of the feces were nearly normal also at the second visit.

Vomiting reduced even more compared to the first visit, and only in 16% of cases remained sporadic; the presence of hairballs in vomit also continued to decrease (22%) in the subjects with vomiting.



Vomiting (figure 6) reduced considerably to being sporadic in 53% of the cases compared to the first visit; the presence of hairballs in vomit fell to 35% of subjects with vomiting.

On the third visit fecal consistency was hard in 62% of patients and loose in 35%; and the presence of hairballs decreased to 3% in the subjects.

### CONCLUSION

According to the findings from the study it is evident that the use of Farmina Vet Life Hairball feline formula represents an effective tool for the prevention and treatment of the clinical manifestations related to trichobezoars presence in the cat's gastrointestinal tract.

## The effects of using Farmina Vet Life Convalescence canine formula.

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The importance of an adequate dietary management in dogs in critical conditions (malnutrition, prolonged fasting, chronic debilitating pathologies) and during convalescence (surgery, hospitalized patients) is a well-known concept in veterinary medicine.

In the situations listed above, the administration of essential nutrients to satisfy the requirements of the animal can be achieved in two ways: enteral or parenteral nutrition. The choice depends on the condition of the animal, the disease it presents, the type of surgery performed and the estimated time required for the specific dietary management. In general, enteral feeding is the best choice when the conditions of the animal allow such an approach.

Enteral feeding may be through spontaneous intake or using tubes of various kinds (rinoesophagee, oesophagostomy, gastrostomy, from jejunostomy) after blenderizing and liquefied if necessary.

Intravenous or parenteral nutritional support should be reserved for specific clinical situations such as: the need to maintain the the digestive system inactive, pernicious vomiting, reduced digestive capacity or absorption, unresolved intestinal obstructions. The choice of this support, compared to enteral feeding, presents several potential complications such as thrombophlebitis, septicemia, intestinal villous atrophy and adynamic ileus.

A proper nutritional support for convalescent, hospitalized or animals in critical condition, formulated to provide energy and nutrients in proportions so that patients maximize its use, is a key component of the protocol treatment in case of affection of the immune system, wound healing, drug response and ultimately, the healing process of the patient in a positive way.

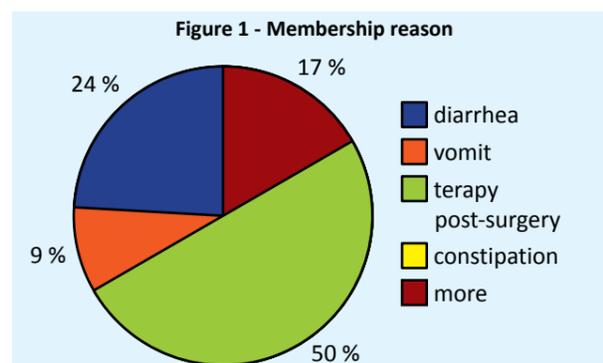
### THE EXPERIMENT

In order to evaluate the practicality of the use of the Farmina Vet Life Convalescence canine formula diet in the treatment of clinical manifestations associated with convalescence or nutritional recovery, a questionnaire was written up for Italian veterinarians who joined the research protocol.

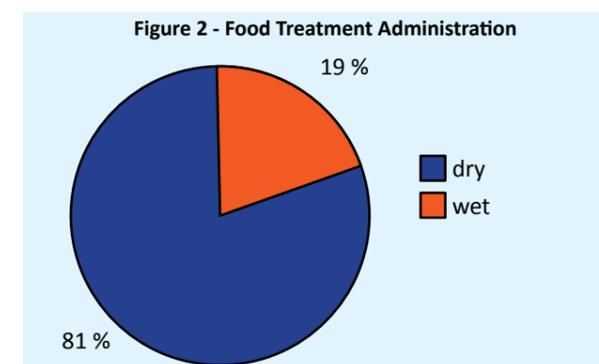
In particular, the questionnaire was divided into two parts: the first to signal cases and the second intended to record the response of the animal and the procedures following a period of variable use between 7 and 21 days.

A total of 52 dogs were recruited (mean age 5.62 years; 27 F, 23 M, 2 unrep.) and were treated exclusively with diet Farmina Vet Life Convalescence canine formula for the entire trial period.

The clinical motivation which drove veterinarians to participate in the recruitment of individuals (figure 1) was mainly post-surgery treatment (50%) and, in fewer cases, symptoms such as diarrhea (24%) and vomiting (9%). The surgery most frequently mentioned was ovariohysterectomy after pyometra, surgery following trauma, neoplasms and removal of foreign bodies. Other causes of recruitment (17%) were debilitation due to infectious diseases (leishmaniasis, rickettsial and viral gastroenteritis), malnutrition and neoplastic diseases.

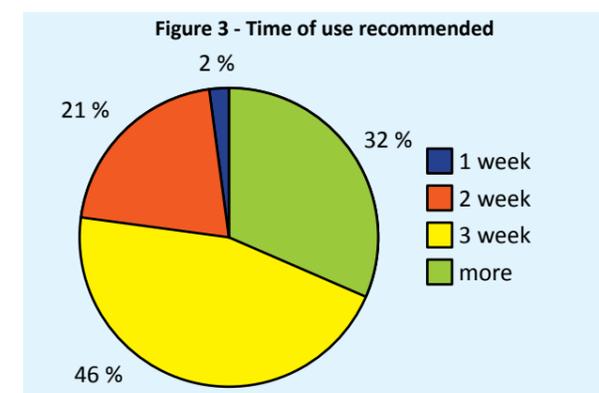


The majority of subjects (81%) were given dry diet (figure 2), while in the remaining water was added for moisture; esophageal tube feeding was not performed in no cases although it is possible with Farmina Vet Life Convalescence after being blenderized and diluted (1g/6ml).



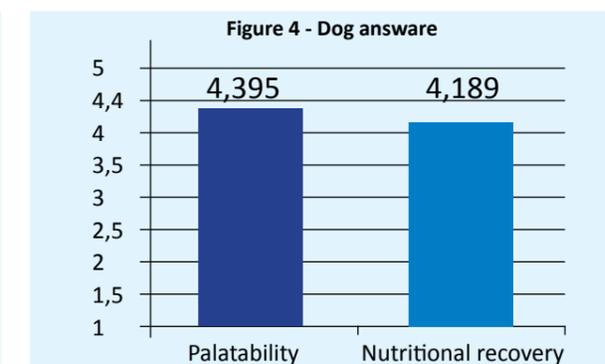
The palatability of the product proved to be good as all of the dogs eat the food and 88% of the cases did not need to be pushed by their owners.

The recommended period (figure 3) varies from one to more than three weeks: only 2% were treated for a week, while the periods were longer than 3 weeks and over (32 and 46%, respectively).

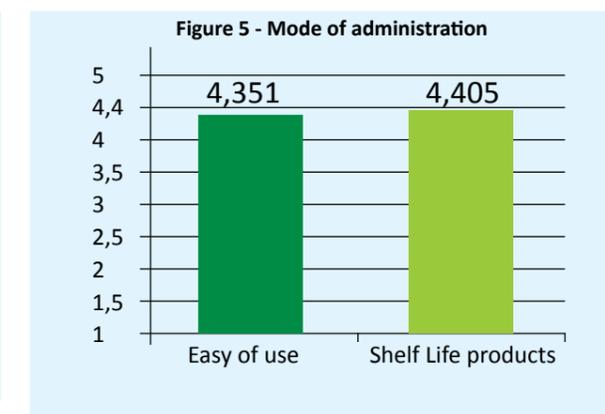


At the control visit, which took place between one to three weeks after recruitment, vets were asked to provide an assessment of the degree of satisfaction of the dietary therapy considering the animal's response (palatability and nutritional recovery) and product administration (practicality of use and preservability), rated from 1 to 5 (1: very unsatisfactory - 5: very satisfied) for each parameter.

With regard to the animal's response to the diet treatment (figure 4), in 86% of subjects palatability was considered to be from very to quite satisfactory (53 and 33%, respectively) with an overall assessment 4.39/5; nutritional recovery had the same ratings in 78% of cases (37 and 41%, respectively) and a rating of 4.18 to 5.



The views expressed on the mode of administration (figure 5) were also very positive. The practicality of use was evaluated from very to quite satisfactory in 84% of cases and unsatisfactory in 4%, reaching as overall judgment of 4.35/5; the preservability of the product was given a rating of 4.40/5



### CONCLUSION

According to the findings, it is evident how the use Farmina Vet Life Convalescence canine formula is a useful and practical support in the therapy after surgery and in the recovery of subjects with nutritional debilitation.

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## Nutritional treatment in cat gastrointestinal diseases.

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The diseases of the gastrointestinal tract are very common problems in the feline species and the clinical signs associated with them such as vomiting, diarrhea, flatulence, weight loss and anorexia are the main reasons for the owners to consult a veterinary surgeon.

In veterinary clinical practice these are facts to which we pay special attention as often it is chronic or recurrent and, despite the many advances that have occurred in the past years in the field of clinical diagnostics and laboratory it is not uncommon to find subjects with symptoms often non-specific and difficult to interpret.

The main causes of gastrointestinal disease can be divided into: food (low-quality or contaminated food, rapid change in food, food allergies and intolerance) parasites (helminths and protozoa such as gastrointestinal roundworms, tapeworms and coccidia) virus (Parvovirus, Coronavirus), bacterial (*E. coli*, *Clostridium perfringens*), cancer (adenocarcinoma, lymphoma) and mechanical (ingestion of foreign bodies, trichobezoars).

Many causes of gastrointestinal disease are associated with different pharmacological therapeutic approaches and sometimes surgery. However, the management of any disease of the gastrointestinal system is not complete without an appropriate diet therapy.

A specific nutritional support can be completely curative in some cases but, even in cases in which diets alone would not be sufficient, it remains a basic therapeutic tool for the management of gastrointestinal disease.

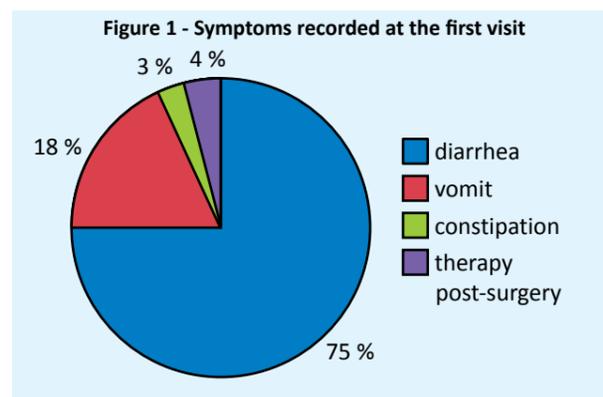
### THE EXPERIMENT

In order to evaluate the effectiveness of Farmina Vet Life Gastrointestinal feline formula in different gastrointestinal diseases, a questionnaire was written up for veterinarians who took part in the research protocol. The questionnaire was divided into four parts: the first was to signaling and the rest was to record the various

symptoms during two (if the administration time was 1-2 weeks) or three assessments (if the time was more than 30 days) carried out on a regular basis during the period of use, varying from 7 to 30 days.

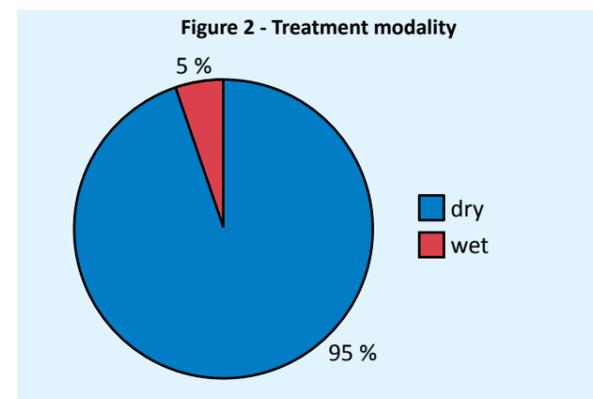
A total of 63 cats were recruited (mean age 4.9 years; 27 F, 33 M, 3 unrep.) who for the entire monitoring period were fed only with Farmina Vet Life Gastrointestinal feline formula diet.

At the first visit (figure 1) the vast majority of subjects (75%), showed diarrhea of variable entities and characteristics while vomiting was present in about 1/5 of the subjects (18%). The combination of clinical signs mentioned above, was found in 9 out of 63 subjects.



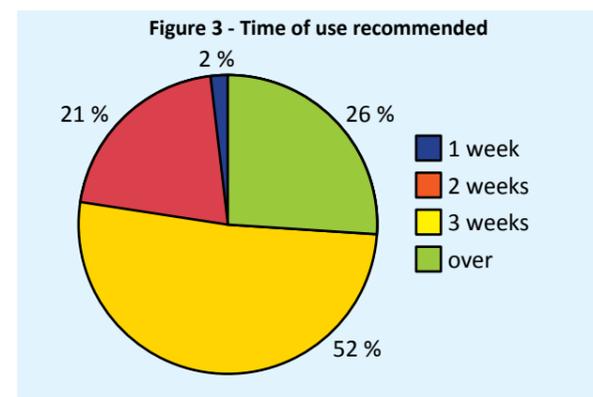
Constipation was found in only two subjects while three patients were enrolled after surgery without showing symptoms.

The vast majority of the subjects (95%) were given dry food (figure 2), while the rest were given dry food moistened with water; esophageal tube feeding was not performed at all although it is possible with Farmina Vet Life Gastro-intestinal after being blenderized and diluted (1g/6ml).



The product was found very palatable because all the subjects ate the food, and more than 90% did so voluntarily, without having to be pushed.

The period of use (figure 3), recommended by the veterinarian, was between 1 and 3 weeks in 75% of cases; the duration of the therapy most frequently chosen was 3 weeks.



The clinical visits during the study period assessed and monitored those that represent the more characteristic clinical signs of gastrointestinal disorders: diarrhea and vomiting.

The assessment of the feces was performed by observing the following parameters: consistency, daily frequency, smell, color.

As for patients with vomiting, the characteristics and daily frequency was evaluated.

At the first visit almost all (91%) of patients had stool consistency ranging from loose (34%) to liquid (57%) and only in the remaining cats feces were hard.

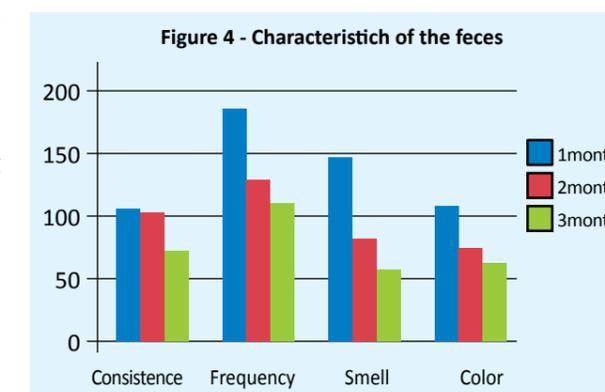
The daily frequency of defecation ranged from two to more than three times (23, 50 and 26% for 2, 3 and more than 3, respectively). The smell was described as normal in 30% of cases and extremely unpleasant in the rest. The color was normal (brown) in 60% of cases, the remaining were reported greenish yellow color (37%) and in only two patients red color was present.

Vomiting in patients with this symptom, was characterized mainly by the presence of only partially undigested material and in a lower number of cases by the presence of bile juices or hairballs; the frequency ranged from sporadic (56%) to more times a day (44%).

At the second visit, after 2 weeks, the fecal consistency showed a first improvement passing in the majority of patients (91%) from hard (37%) to loose (54%) and remaining liquid only in the 9%.

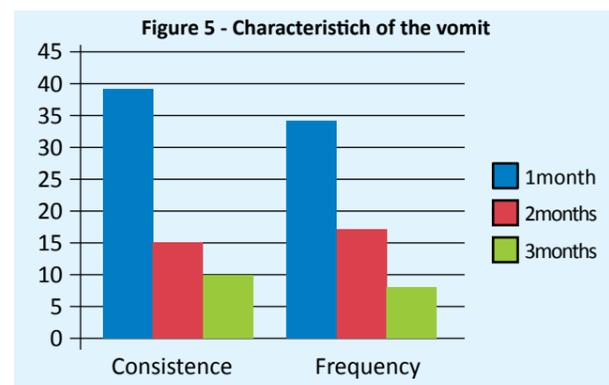
The frequency of defecation (figure 4) showed, from the second control visit, a major improvement going since 1 to 2 times in 70% of cases (5 and 65% respectively), while in 27% it was 3 and over (16 and 11%, respectively); in one case the frequency dropped to below once a day.

As well as the frequency, the odor and color also improved rapidly, showing normal values in 73% and 81% of cases in the second visit.



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Even vomiting (figure 5) reduced to one to several times a day in 23% of the cases.



At the third visit, after 30 days, stool consistency was back to normal appearing hard and well formed in 80% of patients remaining loose in 16% and extremely hard in two patients.

The frequency of defecation saw further improvement resulting from 1 to 2 times in 79% (26 and 53% respectively) and reaching a maximum of 3 times in the remaining patients. Odor and color were normalized in almost all cases (98 and 97% respectively).

Vomiting was completely resolved in 67% of patients, while remaining sporadic in the rest except for two subjects, who in the third visit had a frequency of once a day.

## CONCLUSION

According to the findings it is clear how the use of Farmina Vet Life Gastrointestinal feline formula represents an effective tool in the treatment of major symptoms related to gastrointestinal disease in cats.



## Adverse reaction to food

In veterinary medicine, as in human, several conditions, such as allergies, hypersensitivity, food intolerance, are often used in an improper manner to describe any adverse reaction to food.

In order to avoid confusion below there are the definitions suggested by researchers of the Adverse Food Committee of the American Academy of Allergy and Immunology and reported by Anderson (1986):

1. adverse reaction: any abnormal response following the ingestion of food or food additives.
2. food allergies: it is an incorrect response mediated by the immune system and not attributable to any physiological effect related to the food ingested and/or its additives;
3. food intolerance: all abnormal reactions to food which can not be related to the action of the immune system, such as food poisoning, idiosyncrasies, drug and metabolic reactions.

In most cases, the adverse reactions to foods cause dermatological symptoms (itching, ear infections, seborrheic dermatitis, which may be followed by pyoderma, dermatitis, bacterial or fungal) (Paterson, 1995; Raditic et al., 2011). However, several authors have highlighted that in pets even the detection of gastrointestinal symptoms (diarrhea, abdominal pain, bloating) are not uncommon. (Biourge et al. 2004; Zentek et al., 2002).

In veterinary medicine at present the diagnosis of adverse reactions to foods can be made solely through an exclusion diet until the remission of symptoms, followed by the reintroduction of the diet or ingredients used earlier in order to demonstrate the possible re-appearance of symptoms (Willard et al., 1994; Scott et al., 2001; Guilford & Matz, 2003). The serological and dermal tests are non-specific and may give false positive

responses (Scott et al., 2001). To do this one uses diets with limited antigenic power for a variable period of 8-10 weeks. The homemade diets are usually recommended by veterinary dermatologists for the diagnosis and food management of adverse reactions to foods (Guilford, 1996) as they may be specifically formulated to ensure all the requirements of the animal employing ingredients, bearers of carbohydrates, protein and fat, with which the animal has never come into contact with. However in these cases making the owners stay on the test in the diagnostic period, which in some cases can be long and tiring, is not always easy (Tapp et al, 2002; Ricci et al., 2013). Furthermore animals, especially cats, who are used to eating diets of industrial production do not adapt well to the administration of home-made diets.

Fortunately, over the past decade we have witnessed an increasing number of pet food companies, which produce feed with limited antigenic power that can be used both for diagnostic purposes and therapeutic ones. The main goal of these diets is to limit patient exposure to potential allergens. We can distinguish two types of hypoallergenic diets: the so-called monoprotein and those based on hydrolysates protein. The former are made using a single source of protein of animal origin and a single carbohydrate source, while the new generation hypoprotein diets use hydrolyzate as a protein source and starch alone as a carbohydrate source. In the first case, a search is needed for a new protein source that the animal has never eaten (Jackson, 2001), which is not always easy because the owner may have trouble remembering all the ingredients used, and because the concept of hypoallergenic protein is related to its limited use in formulation of feeds for dogs and cats.

Over the years we have seen the gradual emergence on the market of maintenance diets containing proteins less used in the past, which limits its use as new protein sources (Fadok, 1994).

This would in part explain why the use of monoprotein diets in absence of a specific diagnosis of adverse reaction in some cases gave positive results (Leistra et al., 2001), while in others little or no evidence (Jeffers et al., 1991; Leistra and Willemse, 2002). The hydrolysed diets, instead, provide an alternative in the search for new protein sources, as they are made up of protein fragments of limited size with a molecular weight of less than 10 kD, which besides giving high digestibility it limits the potential of allergenicity (Cave, 2006).

The proteins and glycoproteins of sizes between 14 and 40kD, independently of their nature, have long been identified as the major food antigens (Sampson, 1994), therefore the molecules of a smaller size may be considered inert (Guilford, 1996). These proteins are obtained by breaking, with specific proteolytic enzymes, the protein molecules into peptide fragments of a smaller size. Such a nutritional strategy is successfully applied in the Paediatric field to prevent the onset of allergies and/or food intolerance in infants (Osborn et al., 2004).

The purpose of this study was to evaluate the effectiveness of Farmina Vet Life Hypoallergenic line diets in the diagnosis and treatment of adverse reaction to food in cats and dogs.

## MATERIALS AND METHOD

A questionnaire was written for veterinarians who took part in the protocol test. The questionnaire was divided into four parts: the first part was aimed at signaling and the remaining in the recording of the various symptoms during three visits on a regular basis over 60 days. A total of 111 dogs were recruited (24, 41 and 46 treated with UltraHypo Canine Formula, Hypoallergenic Egg & Rice Hypoallergenic or Fish & Potato, respectively). In the case of the feline species 50 cats were recruited, as it had to test only one diet (UltraHypo Feline Formula).

When joining the Protocol, the owners signed an agreement form which stated the obligation of the exclusive use of the diet selected by the veterinarian and the prohibition of the use of drugs both topical and systemic. Pets continued to live in their familiar environment for the duration of the test without changing their habits.

## RESULTS AND DISCUSSION

### DOG

In all cases, the dermatological symptoms, and in particular itching and its consequences, were most frequently found, and the cause that more frequently led veterinarians to advise owners to join the pilot program. However incidence of diarrhea (39% of treated dogs) was reported much higher (10%) than signaled by Biourge et al. in 2004 in the cases of adverse reactions to food in dogs.

All dogs showed no difficulty in adapting to the diets, therefore, the transition from the diet previously in use to that used for study did not in any case require special administration strategies.

Overall, all patients showed since the second visit a real improvement in the dermatological symptoms, with a considerable reduction in the intensity and severity of the itching and skin and ear lesions. Also the digestive symptoms progressively improved through reduction of the frequency of defecation and improvement in stool consistency. Within 60 days of treatment, most of the dogs (72%) showed complete remission of symptoms in a specific interval (8-10 weeks) indicated by Ricci et al. (2013) as a suitable time to allow a limited antigen diet to act. Overall, the hydrolyzed diet showed better results than both the monoprotein diets, both in terms of required time and the level of symptom remission. The two monoprotein diets gave similar results.

The best results obtained with the hydrolyzed diet are in our view due to the fact that it is not always easy to identify sources of protein unknown to the patient, so the hydrolyzed diet seems more appropriate to act as a deprivation diet in the diagnostic phase, while the two monoprotein ones would be more suitable to use following a certain diagnosis with the identification of the food or of the relative additives responsible for the adverse reaction.

**Table 1 - Symptoms seen in cats during the test**

Diet	UltraHypo	Fish & Potato	Egg & Rice
<b>1st checkup</b>			
N.	24	46	41
Diarrhea	2	21	20
Itch	24	32	29
Otitis	4	33	37
<b>2nd checkup</b>			
N.	23	41	37
Diarrhea	0	10	16
Itch	14	7	13
Otitis	3	15	14
<b>3th checkup</b>			
N.	23	39	36
Diarrhea	0	6	11
Itch	0	4	6
Otitis	0	11	11

### CAT

Table 2 shows the main symptoms found in cats during the test period. Overall, during the the first visit the gastrointestinal symptoms (vomiting and diarrhea) were more frequent in the feline than canine, confirming Guilford et al. observations (2001). Furthermore, the digestive symptoms, seem to be more persistent than the dermatological ones, in fact, after 8 weeks of treatment one cat showed persistence of itching, although reduced in intensity, and TWO cats, although having improved, continued to have sporadic episodes of vomiting and did not show a perfect stool consistency.

Comparing the symptoms recorded during the three visits, on a monthly basis, it appears evident that the diet consisting exclusively of pure starch and hydrolysed fish protein can be considered in general a valuable tool in the diagnosis and treatment of adverse reactions to food in the feline species.

In this species, it also appears to be particularly important to note that all the owners declared that cats eat the new diet willingly, which is important in this species where often the adoption of a deprivation diet is limited and at times prevented by the poor palatability of the ration. In fact, adult cats are often reluctant to make

dietary changes, and at times refusing to eat if the diet is not palatable, with consequences which may become extremely serious considering their specific nutritional needs.

## CONCLUSION

**In both species hydrolysed diets are to be considered good deprivation diets and can be a valuable diagnostic tool, especially when there are persisting symptoms of particularly debilitated patients or if nutritional needs are not met with home-made deprivation diets. It would also seem that this type of diet satisfies most of the owners, who feel that they fully meet the needs of their pets.**

**The two hypoallergenic monoprotein diets seem ideal for the treatment of adverse reaction to food, in particular if their administration is preceded by a diagnosis through a deprivation diet and reintroduction of the suspected food.**

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