

THE BENEFITS OF UNCONVENTIONAL (HOMEMADE) FOOD ADMINISTERED TO DOGS WITH DIGESTIVE DISORDERS

Sorana DAINA¹, Adrian MACRI¹

e-mail: sorana.matei@usamvcluj.ro

Abstract

Homemade dog food preparation for dogs with digestive problems can be worth the time and effort if the owner owns a dog that suffers from regular digestive disorders. Digestive disorders in dogs are quite common problems that veterinarians regularly have to deal with. Patients with digestive disorders often present with similar clinical signs, such as vomiting, diarrhea, constipation, lack of apathy, and abdominal pain. Nutritional modification is an integral part of gastrointestinal disease management, both in preventing recurrence and reducing clinical signs. Once a patient is evaluated from both nutritional and medical perspectives, the general nutritional case approach can be followed to select an appropriate diet and feeding plan for the dog. The objectives were to develop nutritionally balanced homemade food recipes with specific ingredients for digestive disorders in dogs. The recipes were personalized, made of specific ingredients for digestive problems.

Key words: dogs, digestive disorders, home-made food

Many dogs occasionally experience digestive issues. Digestion, nutrition absorption, motility, and fecal evacuation are the four basic processes of the digestive system (Lenox C., 2021). Excessive drooling, diarrhea, constipation, vomiting or regurgitation, appetite loss, bleeding, abdominal pain and bloating, straining to urinate and dehydration are all indications of digestive system disorders (Cave N., 2012). Frequently, the issues are transitory and may result from a single incident of eating something that was in the trash or something that just doesn't agree with his system. However, digestive problems in your canine companion may also be indicators of more serious disorders or an indication that the diet he consumes regularly isn't right for him (Rudinsky A.J. *et al*, 2018). Experts in dog nutrition and veterinarians are becoming more aware of issues with many of the commercial dog feeds on the market today. Dogs are experiencing the repercussions, both in terms of immediate issues and long-term health (Hang *et al*, 2012).

There is no one food that works best for all dogs with sensitive stomachs, just like there is no one food that works best for people with sensitive stomachs. Finding the best food for our dog takes time and patience (Kienzle E. *et al*, 2006). Patients with GI disease should be treated as individuals, because not all dietary strategies work for all patients with similar disease processes

(Rudinsky A.J. *et al*, 2018). Both in terms of reducing clinical symptoms and preventing recurrence, nutritional adjustment is crucial in the management of GI illnesses. The patient's nutritional assessment, clinical signs, history and physical examination findings, laboratory findings, imaging, medication history, and other considerations must be taken into account when choosing a nutritional plan for a dog or cat with GI disease (Chan D.L., Freeman L.M., 2006). After a patient has been assessed medically and nutritionally, a suitable diet and feeding schedule for the dog or cat can be chosen using the general nutritional case approach (Herstad K.M *et al*, 2017).

Not every sensitive stomach can be resolved by a commercial die, but also with the help of homemade diets. Homemade diets can offer complete and balanced nutrition when formulated and administered properly, but they can also put the animal at great risk, because homemade diets have a higher risk of dietary deficiencies, excesses, and imbalances (Joba H.A.O. *et al*, 2020; Streiff E.L. *et al*, 2002; Pedrinelli V. *et al*, 2017). Therefore, at the request of owners of dogs with digestive problems and taking into account the frequency of digestive system disorders in dogs, especially related to poor nutrition, imbalances that occur in the body following the administration of

¹ USAMV CLUJ NAPOCA

commercial diets and the lack of information on homemade food, the main objective was to develop some recipes of homemade food for dogs with digestive problems.

MATERIAL AND METHOD

Homemade dog food preparation for dogs with digestive problems can be worth the time and effort if the owner owns a dog that suffers from regular digestive disorders. These disorders can have different causes: food, infections, poisoning, inflammatory diseases, cancer, etc.

Digestive problems in dogs are fairly common occurrences that most vets see on a regular basis. Considering the frequency of digestive system disorders in dogs, mainly related to poor nutrition, imbalances in the body caused by commercial diets and lack of information about homemade food, we decided to share some facts about the benefits of homemade diets for dogs with digestive problems.

The patients in the study were represented by a number of 7 dogs, of different ages, breed, sex, activity level, who presented to the practice with digestive problems, having different symptoms (vomiting, lethargy, dehydration, abdominal pain, halitosis, diarrhea, hemorrhagic diarrhea, constipation, stool with excessive mucus) dogs that at the owners' wish were switched on homemade food diets for digestive problems. 4 of the patients were fed commercial dry diets, which were changed frequently, and 3 were fed homemade food diets, without a nutritionist's recommendations.

The diets we recommend have been formulated with the help of a software (BalanceIT), using ingredients indicated in different digestive problems in dogs. After the formulation of the diets they were analyzed in terms of analytical composition (dry matter, crude protein, crude fat, fiber, ash, carbohydrates), and the estimation of vitamin D and calcium levels was carried out using a software - HYBRIMIN® Futter 5. After formulating the diets and analyzing them, the caloric level as well as the food requirement/day for each patient was determined according to their weight, age, physiological status, taking into account whether the patients were neutered or not, which influenced the caloric value and nutrient requirement of each dog.

The 5 homemade food recipes included different ingredients that are fed to dogs as follows: R1 - chicken breast, chicken liver, salmon, carrots, green beans, sweet potato, sweet, pumpkin, apple, omega 3, turmeric, vitamin-mineral supplements, probiotics; R2 - turkey meat, brown rice, sweet potato, green beans, broccoli, pumpkin, cranberries, turmeric, parsley, coconut oil, vitamin-mineral supplements, probiotics; R3 - ground beef, brown rice, oats, sweet potato, broccoli, apple, turmeric, coconut oil, vitamin-mineral supplements,

probiotics; R4 - chicken breast, brown rice, oats, sweet potato, green beans, pumpkin, turmeric, omega 3, spirulina, turmeric, vitamin-mineral supplements, probiotics; R5 - chicken breast, beef, oats, green beans, pumpkin, broccoli, yoghurt, coconut oil, spirulina, turmeric, vitamin-mineral supplements, probiotics; R6 - beef, brown rice, sweet potato, green beans, pumpkin, carrots, banana, parsley, turmeric, omega 3, vitamin-mineral supplements, probiotics; R7 - salmon, sweet potato, green beans, oats, pumpkin, cranberries, turmeric, omega 3, spirulina, turmeric, vitamin-mineral supplements, probiotics.

The trick to proper nutrition is to provide a balanced diet that provides all the essential nutrients (protein, fat, carbohydrates, fiber, minerals, vitamins) in the right proportions with the goal of digestive disorders.

In our study we used calories as the unit of measurement, (Castrillo C. *et al*, 2009), and the energy value per 100 g produced was calculated according to the equation (NRC, 2006).

RESULTS AND DISCUSSIONS

All 7 dogs taken in the study, who presented to the practice with digestive problems, having various symptoms, were clinically examined, and underwent investigations in terms of biochemical analysis as well as a faecal analysis. Our aim was to formulate cooked food diets at the request of dog owners with digestive disorders.

For better and accurate guidance on changing the diet, adding ingredients and supplements or administering ingredients for treatment purposes, laboratory analyses were performed on all 7 patients. Based on the data collected from hematology analyses, 5 out of 7 patients suffered considerable changes due to dehydration and loss of fluid. Hematocrit together with hemoglobin showed an increase due to dehydration, while in other patients these two parameters decreased, showing anemia. Slight inflammation due to white cell changes was also evident in 4 out of 7 patients. Changes in biochemistry showed low values in some patients, confirming gastrointestinal problems, and slightly increased values in others, showing dehydration. Increased globulin indicates inflammatory conditions, urea and amylase reveal significant protein loss from the digestive tract, and cholesterol and triglycerides had higher values in patients above ideal weight. Electrolyte measurements showed quite considerable decreases due to diarrhea episodes of the patients.

If we compare the values obtained for the 7 recipes of unconventional homemade food formulated for dogs with digestive problems with the Nutritional Guide for Complete and

Complementary Food for Companion Cats and Dogs (FEDIAF, 2018) recommendations for maintenance (as units/100 g SU), we can say that none of the recipes had protein and fat values below the minimum recommendations given by FEDIAF (18% protein/100 g SU and 5.5 g fat/100 g SU) (Figure 1). In the case of fibre, carbohydrates and ash there are no minimum or maximum recommendations in the FEDIAF legislation for dogs and cats (Figure 1).

Many cases described in the literature show that there are numerous deficiencies or even excesses of certain nutrients in dogs or cats fed a home-prepared or commercial diet, highlighting the importance of a complete and balanced diet for pet health (Marks A.L. *et al*, 2011).

In a study conducted by Pedrinelli V. *et al* in 2017 on 116 home-prepared diets for dogs and cats, they obtained values below the FEDIAF recommendations in a total of 60 samples for calcium and a total of 61 samples for vitamin D.

Another study by De Fornel-Thibaud P. *et al* in 2007, shows a case of osteopenia developed as a result of calcium and vitamin D deficiencies in a dog fed cooked food without the addition of a mineral-vitamin supplement, which led to a syndrome called - rubber jaw syndrome. Since dogs depend exclusively on food sources of vitamin D, it can be considered an essential constituent of the canine diet and requires regular dietary intake, regardless of the season. Because vitamin D is present in only a few food sources, home-prepared diets are often deficient according to NRC, AAFCO and FEDIAF (European Pet Food Industry Federation) standards (Weidner N. and Verbrugge A., 2017). NRC recommendations

on vitamin D in dogs have been made with regard to the prevention of bone abnormalities.

Badwaik P.Y. *et al*, in a 2020 study, show the importance of vitamin D in dogs fed cooked food by explaining the metabolism, status, role, sources, and requirements of these vitamins as recommended by AAFCO (The Association of American Feed Control Officials). Because of these considerations, in our study we dosed the calcium and vitamin D levels in the prescriptions taken in the study. The highest value obtained was 0.92 g/1000Kcal calcium in recipe 7, 26.4% less than the minimum required according to FEDIAF recommendations, and the lowest value was recorded in recipe 3, 0.25 g/1000 Kcal, i.e. 80% less than the minimum required according to FEDIAF recommendations.

In terms of calcium levels in the 7 homemade food recipes, the values were below FEDIAF recommendations - 1.25 - 6.25 g/1000 Kcal.

Regarding the vitamin D level, dosed from the 7 recipes, only 2 of them showed a value of 0.88 IU/1000 Kcal - recipe 2, and 13.15 IU/1000 Kcal - recipe 4. In the case of recipes 1,3,5,6 and 7 the vitamin D level was 0. The results showed that the vitamin D level was below the minimum limit allowed in the FEDIAF recommendations - 125 IU/1000 Kcal - 800 IU/1000 Kcal. Taking into account the below limit values for calcium and vitamin D, vitamin-mineral supplements were added to all seven recipes.

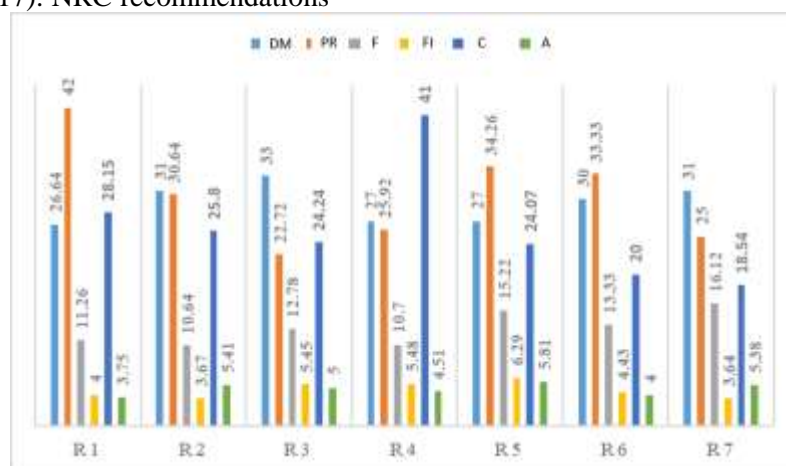


Figure 1 Analytical composition of low cost commercial dog dry food according to label data and concentration of carbohydrates after calculation

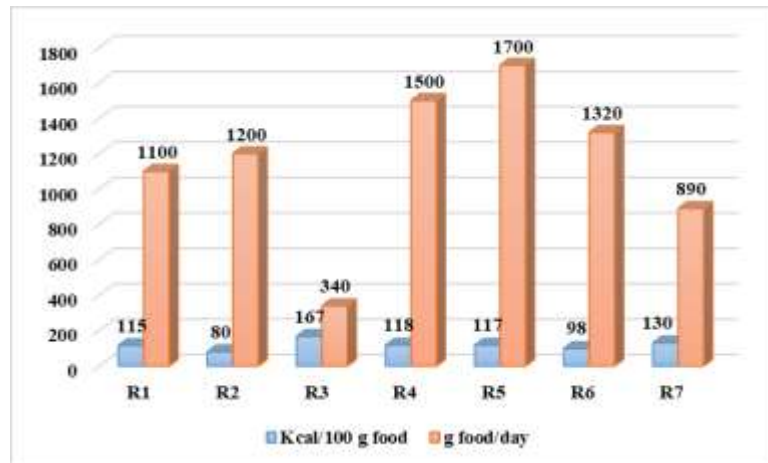


Figure 2 Caloric value and daily requirements for the 7 types of homemade diets formulated

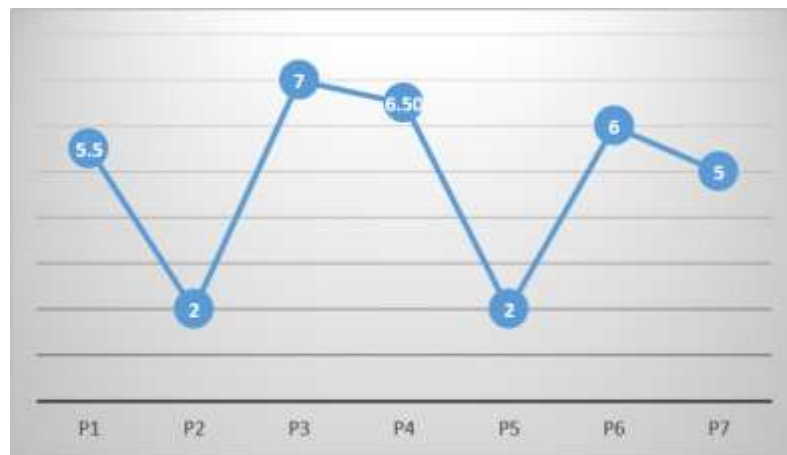


Figure 3 Fecal score results



Figure 4 - Appearance of faeces of dogs with digestive problems

The caloric value of each diet was different, taking into account the different ingredients from which the recipes were made. Depending on the caloric value of each diet and the characteristics of each patient, in the *Figure 2*, we can see the quantities required to be administered per day to each patient. It is essential to regularly monitor the colour of your pet's faeces. The colour of the faeces can give clues as to the general state of health and can signal potential diseases. A Faecal Scoring Chart can be used to interpret and control dog faeces. This scale ranges from 1 to 7. A score of one represents a very hard, solid stool, while seven equates to extremely severe, almost entirely liquid diarrhea. Ideally, your dog's faeces should fall into the 3 range. This will vary from time to time, depending on the food given (*Figure 3*).

In our study we monitored the appearance of the faeces of 7 patients before and after administration of diets developed with specific ingredients for digestive disorders, and we observed that the appearance, consistency and colour improved in some dogs even 2 days after diet administration began (*Figure 4*).

CONCLUSIONS

Nutritional modification is integral to the management of digestive disorders, both in preventing relapses and reducing clinical signs. Although most resolve within a few days, some dogs need long-term nutritional management because they have regular or ongoing digestive problems. Food can have a significant impact on the health of the dog's gastrointestinal tract. Several different nutritional approaches are recommended, depending on the specific diagnosis and symptoms. The main goal is to alleviate symptoms of vomiting and/or diarrhea, so the dogs should be fed a food that is highly digestible to help prevent irritation of the stomach and sensitive intestines. Also, foods high in soluble and insoluble fiber combined with moderate levels of fat help support the dog's gut to function properly.

Although there are many factors to consider when managing dogs with digestive disorders of different causes, the most important things to keep in mind are the top priorities for the patient and that an individualized approach must be taken for all patients. Not all patients with 1 disease process are given only one diet. There are many dietary options for digestive diseases, as different patients benefit from different diets and nutritional strategies.

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