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Food allergen tests and adverse food reactions

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Adverse food reactions (AFR)

Adverse food reactions (AFR) include processes of immunological (allergies) and non-immunological (intolerances, toxicity) origin associated with food intake. Dog and cat food allergies are currently named "food-induced allergic dermatitis" (FIAD) and are characterised by pruritus accompanied or not by clinical digestive signs. Non-immunological reactions manifest with clinical gastrointestinal signs and take the generic name of "Food-responsive Enteropathy" (FRE).

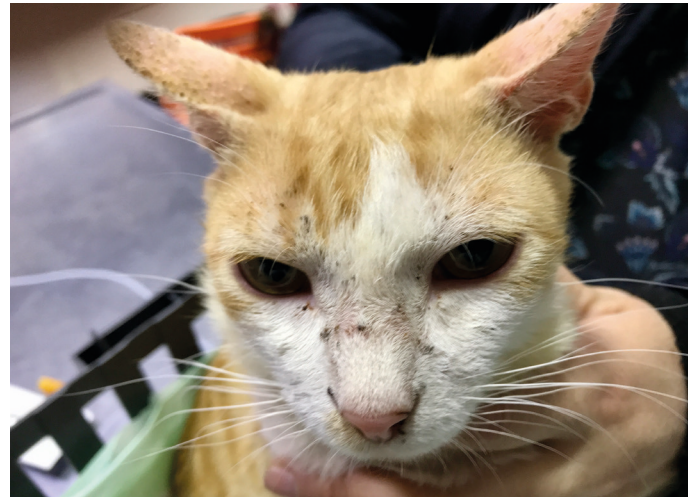
The diagnosis of AFR is confirming by resolution of clinical signs after feeding the animal with an elimination diet, and recurrence when feeding the original food. Finding the ideal diet to feed the affected animal is also the goal to treat the disease.

How to design an elimination diet, limit the possible errors, and get owner compliance is a big challenge for the vet.

Food induced allergic dermatitis (FIAD)

FIAD is primarily a type I hypersensitivity, IgE-mediated, although a type III or cell-mediated hypersensitivity reaction may also be involved. FIAD is estimated to affect 1% of the dog population, and recent studies reported an incidence of up to 36% in dogs affected by allergic disease.

The clinical picture is characterized by non-seasonal itching and pruritus-associated lesions, with a predisposition to the development of bacterial and Malassezia infections. Otitis, pododermatitis and perianal itching are very common in FIAD. 48% of affected animals show clinical signs before one year of age.



Picture Dr Carmen Lorente

The clinical picture is very similar to that of atopic dermatitis (AD) or environmental allergy. Up to 30% of allergic animals suffer simultaneously AD and FIAD, therefore the importance of making a correct diagnosis.

What diet to use as elimination diet?

The elimination diet can be of novel proteins or hydrolyzed proteins.

Novel protein means that the animal has not been exposed to it, that is, that the animal has not ingested it at any time in its life.

Hydrolyzed proteins are proteins that undergo an enzymatic hydrolysis process. The result is low molecular weight protein fractions incapable of inducing an allergic response. Currently, ultra-hydrolyzed diets have 95% of their protein with a molecular weight of less than one kDa and the remaining 5% with a weight of less than 6 kDa. That avoids the possibility of an allergic reaction. Regardless of the diet selected, there must be no contamination with other protein sources. Even small amounts of food are capable of producing the adverse reaction. If a commercial diet is selected, you must have

the brand guarantee of the absence of other ingredients and the lack of contamination in the manufacturing process. To do this, they must carry out strict controls on raw materials, use single production lines for the diet or complete cleaning of the production line before manufacturing and carry out PCRs on the final product.

Several studies have detected the presence of protein sources that were not reflected on over-the-counter canine novel protein foods.

In the case of a homemade diet, the owner must be instructed to avoid contamination of the food with other ingredients, implying cleaning of the surfaces and utensils used in preparing the menu and absence of contact with other foods.



Picture Dr Carmen Lorente

Guide to do a diet trial

- Diet is a diagnostic test and must be carried out strictly.
- The owner must be informed of the importance of strictly following the rules.
- If the diet cannot be done rigorously, it is better not to do it. Examples of factors that can prevent or hinder its realisation are children or older people in the family who do not comply with the diet, flavoured medication, animals not accepting the food (cats), holidays.
- Before starting the diet, the disease must be under control, and the animal must be without infections or lesions. Medication to control the disease is allowed.
- The animal must be fed exclusively with the elimination diet and water. No treats or flavoured drugs. Caution if there are other animals in the house.
- Provide written rules to the owner
- Periodic rechecks during the two-month trial.

- Some animals can improve with four weeks of the diet, but others need up to 8 weeks. It is worth to indicate to the owner that the trial should be maintained for a minimum of 8 weeks.
- At four weeks, if the animal is well controlled, an attempt can be made to withdraw the antipruritic medication for two days, if the pruritus reappears, continue with the treatment until the 8th week. At the end of the diet trial, the treatment must be stopped to evaluate the response to the diet.

What if the animal improves with the elimination diet?

- It is needed to do a provocation test. After two weeks without the effect from medication* and without relapse of the process, evaluate the impact of reintroducing the previous food.
- If the clinical signs reappear in less than 15 days of the challenge, FIAD is confirmed. The animal must return to the restriction diet.
- Food allergen tests are instrumental in trying to find an elimination and maintenance diet for the allergic animal.

What do food allergen tests provide?

1. Evaluation of the need to carry out the diet trial

- The negative predictive value of the food allergen tests is very high. Obtaining negative results for IgE and IgG from a food allergen presupposes that there is no reactivity to that food. If the result for all allergens is negative, it can be assessed whether it is indispensable to do a diet trial.
- Caution: if an animal is continuously and strictly consuming hydrolysate food or single source elimination diet, the results of food allergen tests could be negative. Therefore, food allergen tests must be done before starting those diets.

2. Data to select the ingredients for the elimination or maintenance diet

- The specificity of food allergen tests is very high. A negative result nearly ensures no previous ingestion of the food or the absence of an adverse reaction to it.

- The tests measure specific IgE and IgG against food allergens. Therefore, they can be used for diet selection in both FIAD and FRE.
- In the case of performing a novel protein elimination diet, these serological tests are the most reliable tool to select the ingredients. The other alternative is to list all the proteins the animal have ingested throughout its life, selecting those that it has never consumed.
- My choice is to use either a reliable commercial hydrolysate diet (preferably ultra-hydrolysed) or a homemade novel protein diet, depending on the owner's preference.
- Once FIAD is diagnosed, it is possible to evaluate the response to other ingredients. Always introduced one by one, and start with those that have tested negative for both IgE and IgG on food allergen tests.
- Introduce only one protein, treat or diet at a time and always wait 15 days to assure that the animal tolerates it.
- Once the food has been accepted without reaction in 15 days, it is possible to try another one.



Picture Dr Carmen Lorente

3. Compliance of the owner to the diet

- The main difficulty of an elimination trial is that the owner understands the need to carry it out and, accepts to do it and strictly complies with it.
- Food allergen testing is a critical tool for owner acceptance and adherence to the diet. Once food allergen results are positive, the owner becomes aware of the need to carry out the diet trial.

4. Exotic proteins does not mean hypoallergenic proteins

- Traditionally, the foods most frequently implicated in allergies were beef, dairy, chicken, wheat, eggs, corn, soy.

- The indiscriminate use of foods in regular diet with unusual protein sources (deer, ostrich, salmon, fish...) makes animals of allergic constitution develop an allergy to them and makes it challenging to select ingredients for an elimination diet.

Food allergen tests at LABOKLIN

Laboklin Food Allergen tests analyze up to 42 different protein sources.

Laboklin makes your work easy by using the microarray technique to analyze reactivity to food allergens. This allows testing a long list of allergens with a quite small blood sample. Each allergen is analyzed three times, providing excellent reliability in the results.

List of foods included in the Laboklin panels

Dog Food Allergens Basic: cow, pig, lamb, duck, chicken, turkey, wheat, soy, barley, rice, potato, corn, oats, cow's milk, egg, white fish, salmon, deer, rabbit.

Cat Food Allergens Basic: cow, pig, lamb, duck, chicken, turkey, wheat, soy, rice, potato, corn, cow's milk, egg, white fish, salmon, tuna.

Dog Food Allergens Extended: horse, ostrich, wild boar, reindeer, kangaroo, millet, amaranth, parsnip.

Cat Food Allergens Extended: horse, ostrich, wild boar, reindeer, rabbit, deer, millet, amaranth.

Food Allergens Exotic (dog and cat): hermetia, trout, quail, goat, camel, buffalo, sweet potato, tupinambo, buckwheat, bean, carrot, squash, zucchini, pea, yeast

If you want to test all 42 allergens, use our Food Allergen profiles.

Horse Food Panel: wheat, barley, oats, corn, molasses, soy, yeast, alfalfa.

*Take into account the effect time of the drug. Lokivetmab can have an effect longer than four weeks.