

Novel Protein & Limited Ingredient Diets



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Elimination diet trials using novel proteins are an alternative option to commercial hydrolysed diets. Owners will often opt to prepare their own novel protein diets using crocodile, goat, kangaroo, or venison meat. These diets rarely meet nutritional standards set by AAFCO, FEDIAF, or NRC, resulting in nutrient deficiencies when used for extended periods. Where a limited ingredient diet is appropriate, ZIWI's Venison recipe is complete and balanced. This offers a great alternative for owners to use, both in short and long-term elimination trials, or as an indefinite diet, without compromising on nutrition and health.

Diets for cutaneous adverse food reactions (CAFR)

One of the most prevalent skin issues seen in a veterinary setting is the occurrence of adverse reactions to dietary ingredients, often described as cutaneous adverse food reactions (CAFR). There are two types of CAFR, non-immunologic and immunologic. Non-immunologic reactions are caused by food intolerance, food idiosyncrasy, or toxic reactions to food (such as histamine or bacteria). Immunologic reactions are caused by IgE antibody mediated type 1 hypersensitivity.

The most commonly observed food allergies for dogs are: beef, dairy, wheat, lamb, egg, chicken, and soy.[1] The most commonly observed food allergies for cats are: beef, dairy, chicken, lamb, and fish. Due to such a wide variety of potential food allergens, and due to the extensive amount of different ingredients used in a typical commercial pet food, it is nearly impossible to pinpoint what is causing the hypersensitivity without an elimination diet trial. Currently, an elimination diet trial is the most important and only reliable diagnostic test to evaluate for and diagnosing CAFR in dogs and cats.

Elimination diet trials

An elimination diet usually consists of (1) a prescribed home-cooked diet, or (2) a prescription therapeutic diet. The idea is that during an elimination trial, the diet contains a unique protein and carbohydrate source to which the animal has not previously been exposed. This can be difficult to achieve.

Snapshot of ZIWI Venison

- Grass fed, wild or free range farmed.
- GMO free. Raised without added antibiotics, hormones or growth promotants.
- High in iron.
- Great source of essential B vitamins (B12, B6, B3).
- Low in saturated fat.
- High in animal protein, containing all 10 essential amino acids. Contains NO legumes or plant protein.
- No high glycemic ingredients including grains, potato or tapioca starch.
- No artificial preservatives or unwanted binders such as carrageenan, agar agar or gums.
- Novel protein, limited ingredient recipe – Venison and 3% New Zealand Green Lipped Mussels, providing a natural source of glucosamine and chondroitin.

The problem with “prescription therapeutic” kibble diets

Several research studies published over the last decade have shown that at least some brands of commercial dog foods have ingredient lists - including labelled protein content - that do not always conform to what is actually in the food.

First study [2]:

Four brands of dry dog food that are marketed as novel protein source diets containing venison were tested for the presence of common protein allergens: soy, poultry or beef. ELISA testing was used. Of the four products, two listed chicken and one listed rice protein in addition to venison on their label ingredient panel.

Findings:

Three products labelled as containing tested ELISA positive for soy
One product labelled as containing “ tested positive for beef protein.
Only one product was not found to be positive for soy, poultry or beef proteins.

Second study [3]:

The same team of researchers tested four retail dry dog foods that carried a “No Soy” label claim and seven therapeutic dry foods marketed to veterinarians for use in diagnosing soy allergies in dogs.

Findings:

- Soy protein was detected in three of the four retail brands.
- Of the seven veterinary-prescribed foods, four were found to contain low levels of soy protein.

Third study [4]:

This study assessed 12 dry dog food diets - eleven novel protein diets and one prescription hydrolysed diet - for potential contamination by ingredients of animal origin not listed on the ingredient label. This study used PCR analysis identifying mammal, fish, and bird tissues.

Findings:

- 10/12 products contained DNA fragments from one or more unreported animal source proteins were present.
- 6/10 contained avian fragments
- 5/10 contained fish fragments
- 4/10 contained mammalian fragments

Thus, only 2 foods out of the 12 tested were not contaminated by unlabelled animal ingredients.

Fourth study [5]:

A comprehensive study published in the journal Food Control examined the content of 52 brands of commercial dog and cat food. DNA was extracted from each product and tested for the presence of eight meat species (bovine, caprine, ovine, chicken, goose, turkey, porcine, and equine) using PCR.

Findings:

- 31/52 products were labelled correctly (protein ingredients listed matched the sources that were identified via DNA analysis).
- 21 products contained protein sources that were not listed on the ingredient list
- Chicken was the most commonly undeclared protein source
- 9 products contained undeclared goat meat
- One product contained a non-specific meat that could not be identified.
- Three products did NOT contain the any of the protein source listed on the ingredient panel
- Mislabelling was more frequently observed in canned (wet) pet foods than in dry pet foods.

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What about hydrolyzed protein diets?

Another alternative is to use a hydrolyzed (low-molecular-weight) diet. These diets are composed of common ingredients (such as chicken and soy) that have been molecularly altered to be below the allergenic threshold. This alteration – in theory – prevents the animal's immune system from recognizing the food.

During manufacturing, the hydrolysis of proteins disrupts the protein structure by breaking peptide bonds in the amino acid chains to create smaller peptide fragments. The result is a reduced molecular weight of the original protein, reduced antigenicity and allergenicity of the protein, and it may also increase digestibility.[6]

Two molecules resulting from hydrolysis should be too small to cross-link with two IgE antibodies that are bound to the surface of the mast cells. When these molecules fail to cross-link with IgE antibodies, this prevents mast cell degranulation, and therefore prevents IgE mediated hypersensitivity.[6] Due to this, hydrolyzed protein will not have any effect on the non-IgE (non-immunologic) mediated forms of food allergy.

Even when the animal has an IgE mediated allergy and consuming a hydrolyzed diet, many animals can still react to partial hydrolysates. It has been recorded that up to 50% of dogs with food allergies showed deteriorating clinical symptoms after consuming partial hydrolysates that originated from foods that they were hypersensitive to.[7] It is recommended that clients should avoid feeding a hydrolyzed diet that contains "parent proteins", carbohydrates, and lipids that the animal has been fed previously. This is almost impossible to achieve with the current commercial hydrolyzed diets, as all contain ingredients such as chicken, wheat, and soy.

In addition to hydrolyzed protein, commercially available hydrolyzed diets will also contain carbohydrate and lipid ingredients, which may contain small quantities of intact protein allergens that have not been through a hydrolysis process.[6] These could possibly result in a reaction within the animal.

Hydrolyzed diets are typically not very palatable for animals, as when the peptides are broken down into smaller fragments, bitterness may increase. Gastrointestinal upsets are also common, due to an increase in digestibility and osmolality of the hydrolyzed proteins.[6]

In summary, the issues with hydrolyzed diets that patients may experience are gastrointestinal upsets, low palatability and inappetence, having a non-immune mediated form of CAFR, a reaction to the carbohydrate and lipid ingredients, or a reaction to the partial hydrolysates. In these cases, a novel protein diet is a better alternative.

Homecooked Novel Protein Diets

Owners can prepare a home cooked diet using truly novel protein sources. Novel protein sources commonly used in Australia are crocodile, goat, kangaroo, and venison. Many clients opt to formulate these diets themselves, choosing one novel protein source and one novel carbohydrate source.

Unless formulated by a veterinary nutritionist, it is unlikely that these diets will adhere to the nutritional standards set by AAFCO, FEDIAF, or NRC. These unbalanced novel diets are considered acceptable for very short-term use, however, if such a limited diet extends over a longer period of time, nutritional deficiencies may begin to occur.

When can ZIWI Peak recipes be used?

ZIWI Peak recipes are not suitable for a veterinary food elimination trial, as each recipe contains more than one animal protein source.

However, the Original ZIWI Peak recipes are considered as Limited Ingredient Diets as these contain one meat or fish source plus green lipped mussel. Where food allergies have been identified and a limited ingredient diet is desirable, ZIWI Peak offers owners and veterinarians a simple way to customise a limited ingredient diet for a cat or dog for several reasons.

- Firstly, the specific protein component of the diet can be selected, allowing greater control over ingredients in their dog or cat's diet.
- Original recipes contain either chicken, beef, lamb, venison, or chicken for dog (and mackerel for cats) with the addition of Green Lipped Mussel. Read more about the benefits of venison here.
- Importantly, since ZIWI Peak contains no added grains or other carbohydrates, fillers, or preservatives, the recipes do not introduce other allergens into a restricted diet.
- Other commercial diets often contain vague ingredients such as "meat and meat derivatives", "vegetable oils" or "animal fats" which can lead to the ingestion of potential allergenic foods, or can contain residual proteins withheld in animal fat during extrusion.[8] All ZIWI Peak recipes provide a fully balanced diet for cats and dogs, complying with AAFCO requirements, thus avoiding the risk of developing nutritional deficiencies that a restricted diet can often lead to.
- The addition of green-lipped mussel can benefit skin health. GLM is high in omega-3 polyunsaturated fatty acids (including EPA and DHA).