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Canine Diet & Behaviour

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Introduction

Arden Grange receive many enquiries from dog owners who are concerned about possible links between nutrition and behaviour, and in particular - hyperactivity. There has been much debate concerning this subject in recent years. Nutrition can certainly have an effect upon behaviour and the provision of the best possible diet may help in many cases. However, canine behavioural problems usually arise as a result of many contributing factors, and therefore a change of diet should not be perceived as a "quick fix". Patience, perseverance and professional help will all be necessary when resolving behavioural problems.

Ruling Out Medical Reasons for Behavioural Problems

First and foremost, it is strongly advised that if you are experiencing behavioural problems with your dog, then you seek the advice of your veterinary surgeon in the first instance. This is especially important if your dog's behaviour has changed suddenly and for no apparent reason, since both pain and neurological conditions can manifest in aggression and other unusual behaviours. Once medical reasons have been ruled out, it is recommended that you seek the assistance of a professional, qualified canine behaviourist.

Seeking the Help of a Qualified Canine Behaviourist

There are several different schools of thought in the dog training and behaviour circle, and it can be confusing knowing who is best to consult. Many veterinary practices refer behavioural cases to experts in this field with whom they have a professional relationship, whilst others employ staff who have formal training in animal behaviour. Equally, a recommendation from a reputable breeder, rescue centre, close friend or family member may be helpful, but remember to check credentials and ask for testimonials. Look for a behaviourist who uses only kind methods of training, and who avoids harmful tools such as choke chains and shock collars, and who focuses on the positive reinforcement of good behaviour by reward rather than using methods such as shouting at, pulling on or hitting the dog. A good behaviourist will only consider giving advice once he or she has properly observed the dog, studied the interaction between dog and owner and made a full and thorough assessment.





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Protein & Behaviour

Protein levels per se are not a cause of behavioural problems, but all proteins are not equal. Proteins with a high biological value (i.e. those that are easily broken down by the body into their component amino acids) are the most easily digested, absorbed and metabolised. Egg has the highest biological value (BV 100), with chicken, salmon and white fish being not far behind. These are very good protein sources to have in a pet food, and providing your dog has no known allergy or intolerance to them, they should not be problematic ingredients.

Cereal proteins are less well-digested. Ingredients such as wheat are typically considered as a carbohydrate, but every cereal grain contains a small proportion of protein – the gluten fraction, which enables it to reproduce. Gliadin, which is present in wheat gluten is the most common dietary allergen in dogs. Some pet food companies use ingredients such as extracted wheat gluten and corn gluten meal to boost the overall protein percentage in proportion to the fats and carbohydrates in the diet. It is these cereal proteins which are more likely to provoke an adverse reaction as a result of a dietary allergy than good quality meat and fish proteins (as used by Arden Grange). The Arden Grange recipes are all wheat-free and contain no cereal derivatives. Whilst true food allergies remain rare, if your dog is suffering from classic symptoms (particularly itchy feet and /or ear infections) in conjunction with behavioural problems, then a dietary allergy or sensitivity to certain ingredients could be causing or exacerbating the condition.

The Low Protein Diet Myth

In the past, reducing the overall protein proportion has been helpful in some dogs with threshold based sensitivities, because the provocative ingredient has then been reduced to a level below that which triggers an adverse reaction. However, it makes far more sense to identify and eliminate completely the ingredient/s causing the reaction and substituting them with an alternative that is well accepted by your dog's digestive and immune systems.

Arden Grange are still frequently asked whether the company manufacture a low protein diet by customers believing that "high protein foods cause hyperactivity. True hyperactivity (hyperkinesia) is actually relatively rare in dogs. Dogs suffering from this condition will usually exhibit periods of frenetic behaviour which only ceases when they are too exhausted to continue. However, to the pet owner, it can still be difficult to differentiate between an affected dog and one who is simply unruly.





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Hyperactivity in dogs has numerous potential motivators (including genetic temperament predispositions), but a link between high levels of good quality, highly digestible protein in a dog's diet and true hyperactivity has not been proven.

The Role of Protein in a Dog's Diet

Protein is an essential nutrient that serves numerous functions in the body. Dietary proteins are broken down to form amino acids which support the body's structural and functional demands (including muscle growth, tissue repair and immune function). Arden Grange manufacture foods with carefully balanced levels of good quality proteins that are less likely to cause dietary allergies and their associated symptoms. A low protein diet will typically contain a low volume of meat or fish, a relatively low proportion of fat and higher levels of carbohydrate ingredients. These diets are lower in calories and require higher daily feeding portions. Dogs tend to thrive better on a more energy-dense feed that does not give the gut a lot of additional work to do.

Protein is not usually used as an energy source. Fats and carbohydrates within the diet provide the body's fuel for energy. It is possible that protein has been blamed for hyperactivity since, if consumed in excess, it can be used as an energy source, but this only occurs if an animal is in zero energy balance (i.e. it is consuming less energy than it is expending). If an animal consumes more energy than is expended, then the excess protein is metabolised to fat and is stored in the body. In neither of these cases would the use of protein as an energy source cause excess energy / signs of apparent hyperactivity, since the protein is only utilised when the primary and secondary energy sources (fat and carbohydrate) are depleted.

Carbohydrate Function

The carbohydrates in all of the Arden Grange recipes are carefully balanced to ensure a slow and steady energy release. The Arden Grange complete dry dog food range contains either a combination of rice, corn and beet pulp, rice, potato and beet pulp or potato and beet pulp. The beet pulp, which is a good source of both digestible and indigestible fibre, has the added benefit of lowering the overall position on the glycaemic index of the food in order to ensure sustained energy release throughout the day.

Corn has had unnecessarily bad press recently, but the corn used by Arden Grange is very highly digestible; over 80% in fact. This is achieved by ensuring that it is well





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ground before incorporating it into the recipe and making sure that correct extrusion temperatures are met during cooking. Particle size and heat affect digestibility. Corn is a good energy source, and is used in many of the Arden Grange recipes (along with beet pulp which is included in all of the products) because it has a lower position than rice on the glycaemic index.

With most owners feeding only once or twice a day, diets such as those produced by Arden Grange, which incorporate a carefully balanced combination of nutrients, are the best choice for dogs with behavioural problems. Because stable blood sugar levels are promoted rather than glucose peaks and troughs, energy surges are avoided. This has a positive effect on the dog's serotonin level (also known as the happy or satisfaction hormone) which may help improve concentration and response to training. Many behaviourists recommend Arden Grange for this reason.

Tryptophan

Synthesis of serotonin in the brain depends on the availability of the amino acid tryptophan which is serotonin's precursor. Put simply, serotonin is a brain chemical which acts as a messenger operating between nerve cells. Correct levels must be maintained in order to balance mood and behaviour.

Serotonin is sometimes called the 'satisfaction' brain chemical because, in addition to providing a sense of well-being, if levels are normal then a dog will not experience hunger pangs. Serotonin is made from the amino acid tryptophan which is found naturally in the chicken and fish used in Arden Grange recipes. It is also present in smaller quantities in cereals, potatoes and rice. Corn (in large quantities) has an inhibitory effect on tryptophan, but the Arden Grange recipes include only a moderate proportion of corn, and have naturally high levels of tryptophan.

In the human nutritional management of depression, patients are encouraged to moderately raise their intake of starchy foods (e.g. brown rice, wholemeal bread, porridge oats and jacket potatoes). The reason for this is that tryptophan is such a large molecule and other more easily absorbed amino acids will actively compete with it. These starchy foods help to raise insulin levels and cause a diversion so that tryptophan uptake can take place. This is one of the reasons why low protein diets for the management of canine aggression cases are sometimes still recommended. However this is unnecessary in dogs fed a high quality commercial pet food such as Arden Grange which is nutritionally complete and balanced.





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One study (which is now very dated) did provide some evidence that a lower protein food (alongside tryptophan supplementation) could reduce aggressive behaviour in dogs. Tenuous links were made between high ammonia concentrations in the blood and aggression. Ammonia is a nitrogen-containing waste product of protein metabolism, but in normal animals, the urogenital system will ensure that any waste is safely excreted from the body. Furthermore, animals fed a very high quality, digestible, concentrated protein source (as in Arden Grange diets) that is easily and efficiently metabolised are less likely to encounter problems than animals fed low quality, restricted rations.

The study was flawed somewhat since it used only a very small number of dogs. Nor did it take into account the biological value and digestibility of the protein proportion of the diet. As discussed in the "Role of Protein" section, cereal grains contain a small amount of protein (the gluten fraction) and vegetable proteins such as wheat gluten are of much lower digestibility than animal proteins as well as being one of the most common dietary allergens. Providing the protein source is of superior quality and digestibility there is no indication to lower the levels, nor is there an indication to increase carbohydrates beyond the amounts present in an already complete and balanced diet such as Arden Grange.

Additions such as pasta are an unnecessary source of extra energy, that give the gut extra work and contain wheat gluten (the most common dietary allergen). At the other end of the scale; raw fed dogs suffering from aggression may benefit from a change to a commercial complete pet food such as Arden Grange since their carbohydrate intake is usually very limited.

While serotonin is the messenger, it is necessary for the message to be received. The brain chemical receptors are built principally from essential fatty acids which include EPA and DHA. The best source of omega 3 fatty acids for dogs is salmon oil (which is included in all of the Arden Grange recipes). With long-term supplementation (3-4 months), anxiety and depression can be significantly improved in humans. Their benefits are now becoming recognised in the nutritional management of behavioural problems in canines. Arden Grange recipes are all supplemented with higher levels of omega 3 and 6 fatty acids at the correct ratio.

Dietary Intolerance & Food Allergies

Dietary intolerance should not be confused with a food allergy. A true food allergy is an immune mediated response to a protein source, and usually manifests in skin and / or digestive disorders. Only in very rare cases are bizarre behaviours symptomatic of a





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food allergy. Food allergies can cause tension in the body which may lead to irritability and mean that the dog is less responsive to his owner's commands. Intolerance to certain ingredients in a pet food may contribute to a dog exhibiting hyperactive or unusual behaviour. Food intolerance denotes an abnormal response to a food, which can result from an inability to digest an ingredient, or from pharmacological, metabolic or toxic reactions. Certain chemical colourants and preservatives have been proven to contribute to learning difficulties and hyperactivity in humans. Just like very sensitive children reacting badly to certain additives, dogs can suffer from a similar response (although this is largely based on anecdotal rather than scientific evidence). For this reason all Arden Grange pet foods are free from artificial colourings and flavourings, and only safe, natural, preservatives are used. Furthermore, no added salt or sugar is included. Dogs can experience sugar rushes just like children!

Check List

Diet does have an important part to play in canine behaviour. A hungry dog may engage in 'antisocial behaviours' such as coprophagia (eating faeces), scavenging and exhibiting competitive behaviour towards other animals who may be present at feeding times.

The mechanical effects of timing and frequency of feeding, and the effects of full and empty stomachs on mood and activity levels affect dogs, just as they do us. Blood glucose levels and serotonin uptake may have a strong influence on mood and behaviour. In some cases, frustration with social or environmental circumstances are mistaken for hyperactivity.

- ❑ Make sure you feed your dog the correct daily allowance for his or her weight, ensuring energy intake does not exceed that required. Young dogs, stressed dogs and those with a rapid metabolism especially, may simply use excess energy as fuel which may be mistaken for hyperactivity.
- ❑ Feed a diet that is suitable for the age and activity level of your dog.
- ❑ Ensure that quality ingredients are fed, and that these are easily digestible and efficiently metabolised.

- ❑ Avoid ingredients that often provoke food allergies (especially wheat gluten, soya, dairy products and beef).
- ❑ Avoid artificial colourings, flavourings and preservatives.
- ❑ Ensure that any treats, titbits and training rewards meet the same high standards as the main diet.





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Many commercial dog treats are full of derivatives and additives and, even if a high quality hypoallergenic food is fed as the main diet, additions like these can undo all your hard work.

- ❑ Avoid foods containing largely indigestible proteins such as rawhide chews and pigs' ears.
- ❑ Ensure that your dog leads an interesting, stimulating life to avoid behavioural problems associated with frustration. Dogs love human company, lots of interaction and are happiest when they have something to do.
- ❑ If you are experiencing behavioural difficulties with your dog, try feeding 3 or even 4 smaller feeds per day rather than one or 2 bigger meals to further help promote stable blood sugar levels.
- ❑ Consult your veterinary surgeon to rule out any possible clinical cause for the problem. A qualified pet behaviourist will be able to give you constructive help in resolving any problems. Seeking professional assistance will also help to restore your confidence. Dogs detect confidence and are much less likely to misbehave around an assertive human!

Arden Grange Diets

Of course, not all foods suit all dogs. This is because every dog is an individual with his or her own unique genetic build, digestion and rate of metabolism. Furthermore; age, appetite and activity level will also be important determinants in the selection of the most appropriate product.

The Arden Grange range is often recommended for dogs with behavioural problems including anxiety, hyperactivity and aggression. Benefits include the highly digestible protein sources, balanced carbohydrates and optimal levels of the omega 3 and 6 fatty acids. In addition, plant extracts with powerful natural antioxidant properties are incorporated into the recipes, which may help protect against the harmful free radicals from which stressed dogs are at more at risk. Arden Grange also use MSM; a natural supplement which may help improve mental alertness and response to training. The vitamins, too, are carefully balanced, and are derived naturally where possible to ensure optimal bioavailability. In animals with behavioural problems, the

requirement for B and E vitamins may be higher, and it is important to provide a food that can meet these extra nutritional demands.





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Summary: You Are What You Eat!

Some owners notice changes in their dog's behaviour when diet is changed for the better. Human beings that eat poor diets are likely to be lethargic, and much the same can be applied to our pets. A dog previously fed a poor quality diet may become more energetic when a super premium pet food such as Arden Grange is consumed. This is because Arden Grange diets contain extremely high quality and digestible ingredients in order to provide optimal nutrition. Active dogs are far more likely to maintain a healthy weight than their couch potato counterparts and this vitality and exuberance should not be confused with hyperactivity. Inactive dogs are at risk from obesity and its associated health risks, including diabetes mellitus, degenerative joint disease and circulatory problems. Wouldn't you rather share walks with a happy, healthy dog with a zest for life than spending time in the vet's consulting room?

Caution

Please note that without being able to see your pet in his or her own environment that the advice we may be able to give is limited. If you are experiencing medical problems with your dog, please do seek veterinary advice, and in the case of behavioural problems we strongly recommend consulting a behaviourist.

Further Info / Contact

If you would like any further information or assistance in selecting the optimal diet for your dog, please do not hesitate to contact us.

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