

# COMPARATIVE STUDY ON NUTRITIONAL CHARACTERIZATION OF DRIED FEED FOR YOUTH DOG

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## Abstract

*The study was made for comparative assessment to the nine kinds of dry food for youth canine large breed, the class with higher nutritional requirements. The products take in the study are from the economic, premium and super premium range. Analyzing the Food Standards from literature and the daily amount recommended by producers we observed that energy needs was provided by six products from all. Five products had the medium recommended value for crude protein (26% - 28%) Rest of all has big value until 36%. Compared with untreated fat recommendations (14%) the products take on study have variable value (10% -21%). Ingredients for quality and origin of the products take study have as main ingredient in meat and meat by-product, only one having as main product the cereals. For superpremium products are used whole grains and for most products is obvious that the corn gluten is present in the mixture structure.*

**Key words:** nutrition, dogs, dry food, youth dog

## INTRODUCTION

Currently, global, industrial prepared dog food are increasing used. Of these, dry food, no doubt, occupies the largest share on the market, pet-food [1], [3]. A classification by the percentage of moisture in food shared wetlands (70-80% water), semi wet (30-50% water) and dry (maximum 14% water) [2] For dehydrated food is a qualitative ranking depending on the weight, type and quality of ingredients: the economic food, premium and super premium [5]. In composition of economic food prevailing are cereals, followed by by-product of animal origin with less nutritional value. In premium food, ingredients are present with a higher biological value, usually the first ingredients listed by manufactures are meat laughter or by-products results from industry, these distinguishing quality over next category, super premium, which necessarily must contain, only premium ingredients, most times even raw materials for human consumption, without vegetable protein flours, corn gluten or vegetable or animal by-products [2]. Being a carnivorous animal, the dog must be provided through a superior proportion of animal protein over plant

protein, for a good conduct of metabolic process, the entire digestive tract being adapted to this feeding mode.

## MATERIAL AND METHOD

The study covered the comparative assessment of nine types of dry food for youth large canine breeds. Were compared on these products from the range of economic, premium and super premium:

- Economic: Advance Puppy Large Dog Chow, Puppy Large Breed Growth Formula Abady;
- Premium: Chicopee Puppy Large Breed, Small Animal Junior Large Breed Puppy Arion;
- Superpremium: Acana Puppy Large Breed, Royal Canin Maxi Large Breed Puppy, Large Breed Puppy Proformance.

Nutrient content indicated by the manufacturers for the products listed were analyzed in relation to recommendations and standards for youth feeding large canine breeds, based on information from the literature [6] and the recommendations of acknowledged producers [10], [11], [12] The

products were analyzed and compared in terms of type and proportion of raw materials contained, mentions and order of presentation of ingredients by manufacturers, present legislation requiring them to indicate on the packaging ingredients in order of weight.

## RESULTS AND DISCUSSION

Energy content and the main nutrients for products taken in study, corresponding amounts set by producers, presented in table 1, indicates a high variability of the nutritional characteristics of the nine products, even within the same range of quality (especially in the economic range), the largest variations (up to 800 %) are recorded in the fiber content (CB) and some fat-soluble vitamins.

In time food rules for dogs have changed. Thus, the rules developed before 1990 and those presented by a series of dog food manufacturers in 2010 major differences occur especially in terms of crude fat (an increase of 150...200%, from 5% to 12-15% GB) and fat soluble vitamins (increased by 2 to 9 times), but also for minerals (increased by up to 20%), while fiber concrete values appear (with variations from 2.5% to 7.5%CB) (tab.2). It also shows, quite large differences between different manufacturers recommendations taken in study, particularly for the CB and vitamins.

Analyzing the nutritional characteristics of the studied products in relation to food standards and manufacturers recommendations can be highlighted of features variation a series both in terms of energetical values and principal nutrients.

As shows the fact that in terms of protein level provided all studied products have values falling or exceed (by 10...20% for three products, one economic and two super premium), limits cited in literature; excess protein (expressed as crude protein, possible

based on non-protein N). We do not consider as a positive indicator for quality. In terms crude fat, the studied products are characterized by content ranging between 10% and 21.82% (a variation of over 100% ), these extreme values (especially maximum) common for two items of economic range can be assessed as less desirable (a content too high in fat reduces the digestibility and increase the cost of the product). In case of crude fiber, the studied products showed highly variable values, from 0.6% (Abady) up to 5% (Advance and Dog Chow); it was noted the higher proportion on of CB in economical products, which may affect digestibility and is correlated with a higher proportion of plant ingredients, but contributes to a lower cost of that products. Two economic products (Advance and Abady), had maximum values for Ca (2.5%), this value is 2.5 times higher than the average values of rules, and for P the same products registered the highest values (1.6% and 2%).

For all three soluble vitamins analyzed (A, D and E) large differences are noted (up to 400% for vitamins A and D even 800% for vitamin E) between products considered for study, but the characteristic values is within the range found in literature as standards or recommendations, which put the same wide variability, however, the products premium and super premium have the highest levels of these vitamins, which we consider to be an indicator of quality.

Regarding energy, the studied products presented values which fall within the rules and recommendation set, emphasizing the energy value of over 400kcal/kg of Abady product, product whose overall nutritional characteristics are far beyond the specific range of economic, in which the manufacturer framed the product, which might suggest more a marketing strategy.

Table 1: Chemical composition and energetical value of the studied products

Nr. Crt	Product	Range *	CP (%)	Fat (%)	Fiber (%)	Vit.A (UI)	Vit.D3 (UI)	E (mg)	Ca (%)	P (%)	ME (Kcal/kg SU)
1		E	28.00	16.00	5.00	5500	550	50	2.50	1.60	3434
2	<b>Dog Chow</b>	E	27.00	10.00	5.00	10000	500	100	1.10	0.90	3350
3	<b>Abady</b>	E	36.62	21.82	0.60	20000	700	200	2.50	2.00	4090
4	<b>Chicopee</b>	P	24.30	14.30	2.70	15000	1200	150	1.40	1.00	3800
5	<b>Belcando</b>	P	27.00	14.00	2.50	16250	1625	163	1.30	0.90	3824
6	<b>Arion</b>	P	26.00	14.00	2.00	20000	1500	150	1.30	1.00	3604
7	<b>Acana</b>	S	33.00	15.00	3.50	18000	2000	400	1.20	1.10	3950
8	<b>Royal Canin</b>	S	32.00	14.00	1.50	20000	800	300	1.10	0.90	3848
9	<b>Proformance</b>	S	26.50	14.40	3.50	20000	900	200	1.20	1.00	3850

\*E-economic, P-premium, S-superpremium.

Table 2: Feeding rules for large breed youth dog and average values

Source	Nutrients										
	CP	Fat	Fiber	Ca	P	Vit. A	Vit. D	Vit. E	ME		
	%	%	%	%	%	UI	UI	UI	kcal		
<b>NRC, 1985 and Wolter, 1998 (cited by Stoica, 2001)</b>	24.00	5.00	?	0.70	0.50	3700	404	22	3750		
<b>www.eukanuba.com</b>	26.00	15.00	7.50	1.00	0.80	12000	750	200	4060		
<b>www.innovapet.com</b>	24.00	12.20	2.50	0.90	0.72	22633	2169	350	3566		
<b>www.purina-proplan.com</b>	29.00	15.00	3.00	1.20	1.00	21000	1600	170	3583		
<b>Average values</b>	25.50	12.00	4.30	0.95	0.75	14833	1231	185.50	3793		

Table 3: Raw materials used and the their proportional order in the studied products \*

Materials contained	Product										
	Ad	DC	Ab	Ch	B	Ar	Ac	RC	Pr		
Poultry	-	-	-	-	-	2	1	1	-		
Meat unsuitable species	1	-	-	-	-	-	3	-	-		
Dried poultry	-	-	1	1	1	-	-	-	-		
Mutton	-	-	-	-	-	-	-	-	1		
Beef	-	-	5	-	-	-	-	-	-		
Fish meat	-	-	3	-	4	6	4	-	-		
By-product	1	2	4	-	-	2	-	-	-		
Animal fat	6	6	-	4	7	4	6	5	5		
Vegetable oil	-	-	6	-	-	4	-	-	-		
Eggs and by-product	-	-	-	-	-	5	-	-	-		
Cereals	4	5	-	-	-	1	-	-	-		
Corn	2	1	-	3	2	-	-	-	4		
Wheat	-	-	-	2	3	-	-	-	-		
Wheat bran	-	-	-	5	-	-	-	-	-		
Oats	-	-	-	-	-	-	2	-	7		
Brown rice	-	-	-	-	-	-	5	2	2		
Rice	3	4	2	-	-	-	-	3	3		
Sugar beet pulp	-	7	-	6	6	-	-	6	-		
Vegetable protein concentrate	5	-	-	-	-	-	-	-	-		
Corn gluten	-	3	-	-	-	-	-	4	6		
Whey powder	-	-	-	-	5	-	-	-	-		
Protein hydrolysates	-	-	-	-	-	3	-	-	-		

Ad-Advance, DC-Dog Chow, Ab-Abady, Ch-Chicopee, B-Small Animal, Ar-Arion, AC-Acana, RC-Royal Canin, Pr-Performance  
 \*-1 for the ingredient with the higher share, 2-7 in descending order of share

Analyzing the raw materials used and the order of their proportion in the structure \*of the studied products (Table 3) revealed that most products have the raw material for fresh poultry meat (Arion, Acana, Royal Canin) or dehydrated (Abady, Chicopee, Belcando) also, meat by-products are found in the composition of all economic products, some (Advance) even as the basic ingredient. Eggs and by-product of egg are present only in Arion, premium product.

For the economical and premium products, cereals used are corn and wheat and or/and their by-products, although these two ingredients have low digestibility at dogs, but are relatively inexpensive compared to other sources and because of that are preferred by manufacturers [5]. For the super premium products, cereals used (rice, brown rice, oats) are plant sources much better tolerated by dogs, showing an increased digestibility.

One of the products 'premium' (Arion), has as basic ingredient cereals, and the only one which has in his composition eggs and eggs by-products (protein ingredient with high biological value protein and high digestibility).

Corn gluten, although a source of vegetable protein with lower biological value, is used even in some super premium products.

Fats used by most manufacturers are animal origin, only one product (Abady), introduced the vegetable oil in the recipe (wich we consider positive under dietary aspect).

Fish meat, nutritionally value but more costly, is present in the composition of some products as ingredient of the order 3-6, but without specification on how to preserve.

Sugar beet pulp, although it is considered an ingredient that can cause digestive disorders [5], is present in the structure of four products, but the proportion of is reduced use.

Other raw materials - whey powder, protein hydrolysates, wheat bran - were found just one product, usually as minor ingredients in share.

## CONCLUSIONS

In from of the study of nutritional characteristics of the products there was a large variability in values, especially for protein content, fiber and fat-soluble vitamins.

Current dietary recommendations (2010) presented in literature by major manufacturers in the field of pet food are much increased (especially for fat) reported to the NRC feeding standards from the year 1995.

In studied products were used a total of 22 raw materials. The most frequently used were: meat from different animal species, by-products from meat and grain, from rarely used ingredients are corn gluten (even at super premium products) or beet pulp.

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