

COMPARATIVE ANALISYS OF DOGS NUTRITION WITH DEHYDRATED FOOD WITHOUT ADDITIVES AND THOSE WITH ADDITIVES (CARBOHYDRATES AND CALCIUM) IN RACE AMERICAN AKITA

Goce Cilev^{1*}, Zhivko Gacovski¹, Biljana M. Petrovska¹, Mario Mano¹, Martin Mano¹, Nikola Pacinovski²

¹University Ss. Clement of Ohrid -Faculty of Veterinary Medicine, Prilepska bb; p.box. 150,7000 Bitola, R. Macedonia. ²University Ss. Cyril and Methodius-Institute of Animal Husbandry, Ile Ilievski 92a; p.box. 207, 1000 Skopje, R. Macedonia.

**Corresponding author: Prof. dr. sc. Goce Cilev, Ph.D; E-mail: goce_cilev@yahoo.com*

ABSTRACT

The aim of this experiment was examine the comparative analisys of dog nutrition with dehydrated food without additives and those with additives (carbohydrates and calcium) on race Amerikan Akita. The research was conducted in dogs breeding house, near by the Bitola, R. Macedonia in 2016 year. The research was done on 6 dogs from race American Akita, kept the intensive conditions. Male dog MP 50040 feeding with dehydrated food without additives on 6 month age has a body weight of 36 kg with growth of 7 kg, than the male dog MP 50043 feeding with dehydrated food with additives on 6 month age has a body weight of 38.3 kg with growth of 7.8 kg, that mind has a bigger body weight for 2.3 kg and bigger growth for 0.8 kg on dog who feeding with dehydrated food without additives. Female dog MP 50041 feeding with dehydrated food without additives on 6 month age has a body weight of 34.5 kg with growth of 6.7 kg, than the male dog MP 50044 feeding with dehydrated food with additives on 6 month age has a body weight of 37.3 kg with growth of 8 kg, that mind has a bigger body weight for 2.8 kg and bigger growth for 1.3 kg on dog who feeding with dehydrated food without additives. Female dog MP 50042 feeding with dehydrated food without additives on 6 month age has a body weight of 34 kg with growth of 6 kg, than the male dog MP 50045 feeding with dehydrated food with additives on 6 month age has a body weight of 37.3 kg with growth of 8.1 kg, that mind has a bigger body weight for 3.3 kg and bigger growth for 2.1 kg on dog who feeding with dehydrated food without additives. Three dogs feeding with dehydrated food without additives on 6 month age have a average body weight of 34.83 kg with growth of 6.57 kg, than the three dogs feeding with dehydrated food with additives on 6 month age have a body weight of 37.63 kg with growth of 7.97 kg, that mind has a bigger body weight for 2.8 kg and bigger growth for 1.4 kg on dogs who feeding with dehydrated food without additives. General conclusion for all research is fact that the group dogs who feeding with dehydrated food with additives (carbohydrates and calcium) for all period of growth from 3 to 6 month age have a bigger average body weight and bigger average growth comparied to dogs feeding with dehydrated food without additives.

Key words: dogs, American Akita, nutrition, dehydrated food, additives

INTRODUCTION

Dog as a species is very unusual. It existed before man can not live on if not changed him. The oldest remains of a dog sceleton that clearly notes that it is a pet found in the river valley Old Crow, north of Alaska day and originate from before 27,000 years. The dogs followed the then members of the genus Homo, which passed through the Bering Strait today, and creating an alliance with man, voluntarily renounced their independent and linked with the animal world

Science & Technologies

that no longer able to return. Their world became the world of man. It can also be concluded that man winning over the dog as his companion made the best deal in its history. The dog, in their own way, offer a gift that can be returned to the same extent: unlimited connection, loyalty, love and friendship. If this connection between dog and man is mutual, then it makes sense to expect the dog to be man gave all his strength and ability. For centuries, the dog accompanies man hunting, pulling the sled, keeps his sheep and the house, excited arenas and racing sacrifice his life in the army and police and accompany you in case you lose your vision. Considering this, it meets all the conditions to be the best human friend.

Meaning it assigns to this man hanging out with the dog found its reflection even in the oldest art in the world. The dog is represented in the cave paintings of hunters, and the walls of the royal tombs and the Babylonian reliefs. Dog figures are known since the earliest Chinese dynasties and has in the culture of the South American Indians. Assyrian reliefs depicting ancient dogs for fighting. Today there are more than 400 described and defined standard races. They differ in appearance, character, temperament and according to their characteristic. There are hairy and shaggy breeds, such as the Bobtail, Lhasa Apso or Skay Terrier and others who, almost no fiber, such as Chinese and Mexican naked dog dog. Some are unusually fast, such as Windhund. Over the centuries, thanks to the changing conditions of life, the dogs were given new assignments of some races over time changes, specialized, while others disappeared. This process virtually endless, and continues today. While the dog is the oldest domestic animal, the relationship between dog and man is characteristic that man must respect his dog and that from the start. It is not just practical issues about living together with the dog, his diet, hygiene and dresing but his attitude and reaction.

History of the race and FCI standard

Origin: Japan; Land development: America; Classification FCI Group - 5; Section: Dog escort

In the early history of American Akita was similar to the history of Japanese Akita. Since 1906. in Akita dog named "Akita matagi" (with average growth for bear) were used as fighting dogs. Since 1868. these dogs are crossed with race Tosa (Tosa) and Mastiffs (Mastiff). After crossing, the growth of the race increased, but ran out of some characteristic traits inherent to the dogs on the type Spitz (Fowler, 1986). In 1908. Dog fighting was banned. The race however was preserved and improved as a large Japanese breed. As a result in 1931. Nine samples received top title "Natural monuments". During the Second World War was common use of dog fur for making military clothing. Police ordered to confiscate all dogs except German shepherds which were used for military purposes. Some fans tried to circumvent the law vkrstuvajkji their dogs with German shepherds. So by the end of the Second World War the number of Akita dogs dangerously reduced and turned up three different types:

1) type Akitas Matagi; 2) Akita dogs for fighting; 3) Akita dogs - shepherds

It contributed to a very confusing situation in the breed. During the renewal of the race after the war, race, Kongo-go, a dog any blood relatives with Dewom (Dewa), but there were passing great popularity. Many Akitas of the line Dewa, who fulfilled the characteristics of mastivot German shepherd, military brought with him to America. Akitas from Dewa vine, intelligent dogs that could be adapted to different environments, fascinated breeders in the United States so this lineage who developed numerous breeders and its popularity grew. American Akita Club was founded in 1965 and Americhkoto Kennel Association (AKC) recognized this breed

Science & Technologies

(registered in generic book and received regular status exhibitions) in October 1972. But at that time AKC and JKC (Japanese Kennel Association) had mutual agreements for reciprocal recognition of rodovnicite and thereby restore the introduction of new bloodlines from Japan were closed. Because Akitas from the US and Japan differed. They have developed a characteristic type for the United States and that type remained unchanged until 1955. These were the difference Akito from Japan who were crossbreeding with Matagi Akitas for the renewal of the original pure breed.



Picture.1. Dog race American Akita

MATERIAL AND METHODS

The subject of our research was to make a comparison between dehydrated food for large breeds of dogs American Akita and food for dogs with the addition of carbohydrates and higher in calories and calcium additive. Stomach in dogs is essentially is depo of storage with greater capacity, which allows the dog to overeat, given that in the past had to eat when you can afford and how much you can afford to be able to withstand the next occasion. Digestion is slow and lengthy process. In the intestine of dogs live ekodinamic whole system, in which 'good' bacteria entered with more milk, and then the intake of different foods, establishes optimum balance for good digestion. The dog was created as would barrel and absorbed primarily fat and protein that contains all the necessary minerals and vitamins. Young puppies need the additives in food of 0.6% calcium because enter of insufficient calcium and phosphorus leads to rickets (*Bauer, 1992*).

Our survey covered 6 puppies from the same litter of which 4 female and 2 male. The first group included 2 females and 1 male dog who are fed with dehydrated food without special additives, the other group consists of 2 female dogs and 1 male dog that despite the daily intake of dehydrated food as in the first group were added is a certain amount of carbohydrates and animal fats and supplement of calcium and phosphorus 540.0 mg 340.0 mg. The aim of the research was to make a comparative analysis of the 3-6 month growth and development in young puppies from the same litter of American Akita, to determine the need for supplements of carbonhydrates, fat and calcium as it affects the general health and fitness and proper growth and development. To determine the difference in development between the two experimental groups

aged 3 to 6 months for the same litter from American Akita feeding with dehydrated food without additives and added of carbonhydrates and calcium.

For that we can quantitatively calculated data and that's shown we are numerically and percentage (%) presentation of results as well as the method of comparative analysis of the results of the research has. For the presentation of the results and the data used:

- Table for shown the monthly growth and development of puppies from 3 to 6 months from the same litter on the American Akita are fed dehydrated food without additives and added of carbonhydrates and calcium.

- graphs to display the values of the comparative analysis

RESULTS AND DISCUSSION

Our research it was conducted through a comparative analysis of the data for month growth and development of puppies from 3 to 6 months from the same litter the American Akita are fed dehydrated food without additives and added of carbohydrates and calcium. Based on the presented research obtained the results that are shown in the following table:

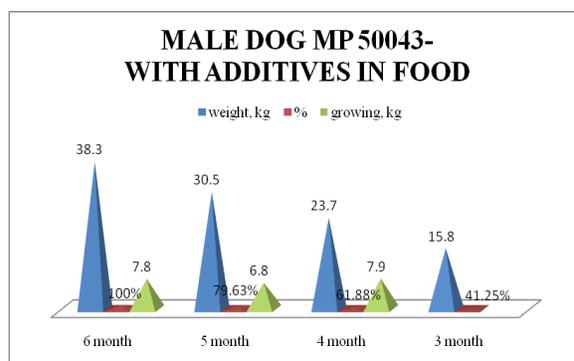
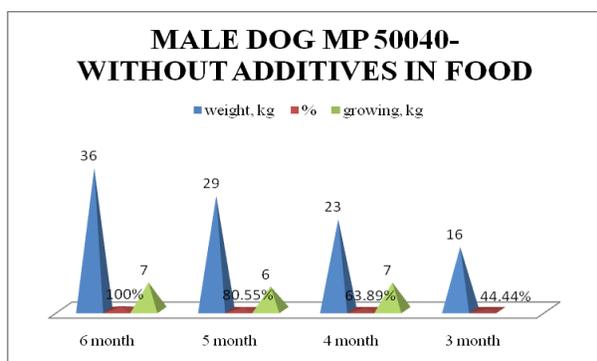
2.1. Comparative analysis on the growth and growing the male dog MP 50040 are fed dehydrated food without additives and male dog MP 50043 are fed dehydrated food with additives on 3, 4, 5 and 6 month

Tab.1. The growth and growing the male dog MP 50040 are fed dehydrated food without additives on 3, 4, 5 and 6 month

| <i>Male dog MP 50040 are fed dehydrated food without additives</i> | <i>Body weight, kg</i> | <i>%</i> | <i>growing , kg</i> |
|--|------------------------|----------|---------------------|
| <i>6 month</i> | 36 | 100% | 7 |
| <i>5 month</i> | 29 | 80.55% | 6 |
| <i>4 month</i> | 23 | 63.89% | 7 |
| <i>3 month</i> | 16 | 44.44% | |

Tab. 2. The growth and growing the male dog MP 50043 are fed dehydrated food with additives on 3, 4, 5 and 6 month

| <i>Male dog MP 50043 are fed dehydrated food with additives</i> | <i>Body weight, kg</i> | <i>%</i> | <i>growing, kg</i> |
|---|------------------------|----------|--------------------|
| 6 month | 38.3 | 100% | 7.8 |
| 5 month | 30.5 | 79.63% | 6.8 |
| 4 month | 23.7 | 61.88% | 7.9 |
| 3 month | 15.8 | 41.25% | |



Male dog MP 50040 feeding with dehydrated food without additives on 3 month age has a body weight of 16 kg, on 4 month 23 kg with growth of 7 kg, on 5 month 29 kg with growth of 6 kg and on 6 month 36 kg with growth of 7 kg, than the male dog MP 50043 feeding with dehydrated food with additives on on 3 month age has a body weight of 15.8 kg, on 4 month 23.7 kg with growth of 7.9 kg, on 5 month 30.5 kg with growth of 6.8 kg and on 6 month 38.3 kg with growth of 7.8 kg.

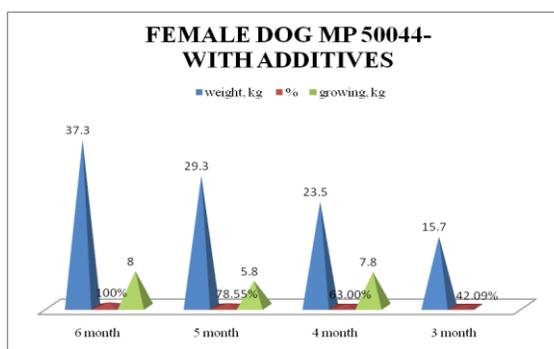
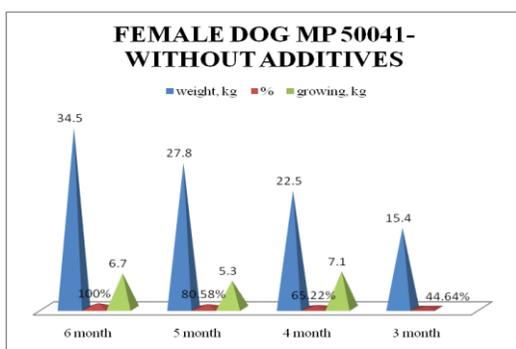
2.2. Comparative analysis on the growth and growing the female dog MP 50041 are fed dehydrated food without additives and female dog MP 50044 are fed dehydrated food with additives on 3, 4, 5 and 6 month

Tab.3. The growth and growing the female dog MP 50041 are fed dehydrated food without additives on 3, 4, 5 and 6 month

| <i>Female dog MP 50041 are fed dehydrated food without additives</i> | <i>Body weight, kg</i> | <i>%</i> | <i>growing, kg</i> |
|--|------------------------|----------|--------------------|
| 6 month | 34.5 | 100% | 6.7 |
| 5 month | 27.8 | 80.58% | 5.3 |
| 4 month | 22.5 | 65.22% | 7.1 |
| 3 month | 15.4 | 44.64% | |

Tab.4. The growth and growing the female dog MP 50044 are fed dehydrated food with additives on 3, 4, 5 and 6 month

| <i>Female dog MP 50044 are fed dehydrated food with additives</i> | <i>Body weight, kg</i> | <i>%</i> | <i>growing, kg</i> |
|---|------------------------|----------|--------------------|
| 6 month | 37.3 | 100% | 8 |
| 5 month | 29.3 | 78.55% | 5.8 |
| 4 month | 23.5 | 63.00% | 7.8 |
| 3 month | 15.7 | 42.09% | |



Female dog MP 50041 feeding with dehydrated food without additives on 3 month age has a body weight of 15.4 kg, on 4 month 22.5 kg with growth of 7.1 kg, on 5 month 27.8 kg with growth of 5.3 kg, and on 6 month 34.5 kg with growth of 6.7 kg, than the female dog MP 50044 feeding with dehydrated food with additives on 3 month age has a body weight of

15.7kg, on 4 month 23.5 kg with growth of 7.8 kg, on 5 month 29.3 kg with growth of 5.8 kg, and on 6 month 37.3 kg with growth of 8 kg .

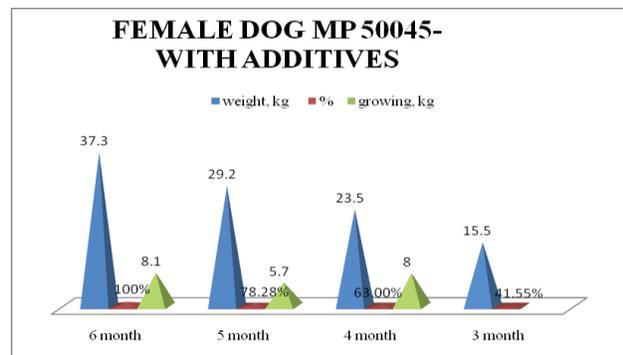
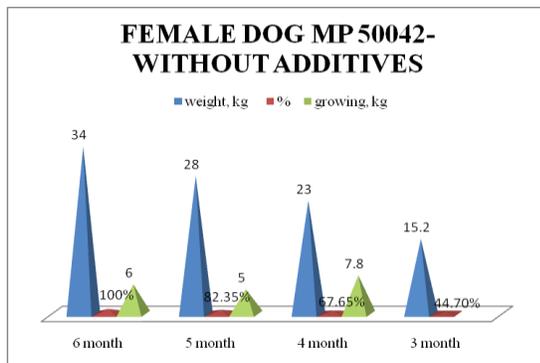
2.3. Comparative analysis on the growth and growing the female dog MP 50042 are fed dehydrated food without additives and female dog MP 50045 are fed dehydrated food with additives on 3, 4, 5 and 6 month

Tab.5. The growth and growing the female dog MP 50042 are fed dehydrated food without additives on 3, 4, 5 and 6 month

| <i>Female dog MP 50042 are fed dehydrated food without additives</i> | <i>Body weight, kg</i> | <i>%</i> | <i>growing, kg</i> |
|--|------------------------|----------|--------------------|
| <i>6 month</i> | 34 | 100% | 6 |
| <i>5 month</i> | 28 | 82.35% | 5 |
| <i>4 month</i> | 23 | 67.65% | 7.8 |
| <i>3 month</i> | 15.2 | 44.70% | |

Tab. 6. The growth and growing the female dog MP 50045 are fed dehydrated food with additives on 3, 4, 5 and 6 month

| <i>Female dog MP 50045 are fed dehydrated food with additives</i> | <i>Body weight, kg</i> | <i>%</i> | <i>growing, kg</i> |
|---|------------------------|----------|--------------------|
| <i>6 month</i> | 37.3 | 100% | 8.1 |
| <i>5 month</i> | 29.2 | 78.28% | 5.7 |
| <i>4 month</i> | 23.5 | 63.00% | 8 |
| <i>3 month</i> | 15.5 | 41.55% | |



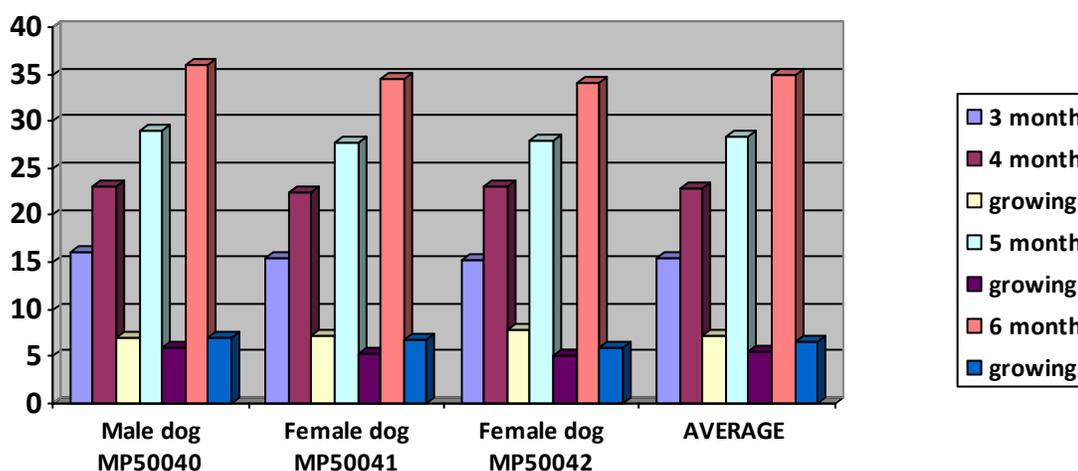
Science & Technologies

Female dog MP 50042 feeding with dehydrated food without additives on 3 month age has a body weight of 15.2 kg, on 4 month 23 kg with growth of 7.8 kg, on 5 month 28 kg with growth of 5 kg and on 6 month 34 kg with growth of 6 kg, than the female dog MP 50045 feeding with dehydrated food with additives on on 3 month age has a body weight of 15.5kg, on 4 month 23.5 kg with growth of 8 kg, on 5 month 29.2 kg with growth of 5.7 kg, and on 6 month 37.3 kg with growth of 8.1 kg .

2.4. Comparative analysis on the average growth and growing on the three dogs are fed dehydrated food without additives and three dogs are fed dehydrated food with additives on 3, 4, 5 and 6 month

Tab.7. The average growth and growing on the three dogs are fed dehydrated food without additives on 3, 4, 5 and 6 month

| Group 1 | Body weight on 3 month, kg | Body weight on 4 month, kg | growing | Body weight on 5 month, kg | growing | Body weight on 6 month, kg | growing |
|---------------------|----------------------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|
| Male dog MP 50040 | 16 kg | 23 kg | 7 kg | 29 kg | 6 kg | 36 kg | 7 kg |
| Female dog MP 50041 | 15.4 kg | 22.5 kg | 7.1 kg | 27.8 kg | 5.3 kg | 34.5 kg | 6.7 kg |
| Female dog MP 50042 | 15.2 kg | 23 kg | 7.8 kg | 28 kg | 5 kg | 34 kg | 6 kg |
| AVERAGE | 15.53 kg | 22.83 kg | 7.30 kg | 28.26 kg | 5.43 kg | 34.83 kg | 6.57 kg |

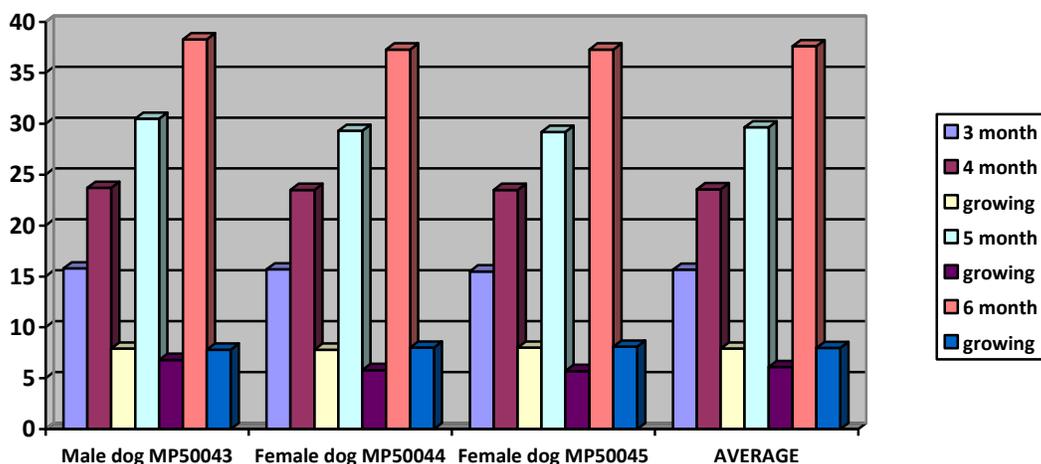


Science & Technologies

Three dogs feeding with dehydrated food without additives on 3 month age have a average body weight of 15.53 kg, on 4 month 22.83 kg with growth of 7.30kg, on 5 month 28.26 kg with growth of 5.43kg and on 6 month 34.83 kg with growth of 6.57kg.

Tab.8. The average growth and growing on the three dogs are fed dehydrated food with additives on 3, 4, 5 and 6 month

| Group 2 | Body weight on 3 month, kg | Body weight on 4 month, kg | growing | Body weight on 5 month, kg | growing | Body weight on 6 month, kg | growing |
|----------------------------|----------------------------|----------------------------|-----------------|----------------------------|-----------------|----------------------------|-----------------|
| Male dog MP 50043 | 15.8 kg | 23.7 kg | 7.9 kg | 30.5 kg | 6.8 kg | 38.3 kg | 7.8 kg |
| Female dog MP 50044 | 15.7 kg | 23.5 kg | 7,8 kg | 29.3 kg | 5.8 kg | 37.3 kg | 8.0 kg |
| Female dog MP 50045 | 15.5 kg | 23.5 kg | 8 kg | 29.2 kg | 5.7 kg | 37.3 kg | 8.1kg |
| AVERAGE | 15. 66 kg | 23. 56 kg | 7. 90 kg | 29. 66 kg | 6. 10 kg | 37. 63 kg | 7. 97 kg |



Three dogs feeding with dehydrated food with additives on 3 month age have a average body weight of 15.66 kg, on 4 month 23.56 kg with growth of 7.90kg, on 5 month 29.66 kg with growth of 6.10kg, on 6 month 37.63 kg with growth of 7.97kg.

CONCLUSIONS

Unanimously realized it examined and the results obtained from them, virile to adopt the following conclusions:

Science & Technologies

- Male dog MP 50040 feeding with dehydrated food without additives on 6 month age has a body weight of 36 kg with growth of 7 kg, than the male dog MP 50043 feeding with dehydrated food with additives on 6 month age has a body weight of 38.3 kg with growth of 7.8 kg, that mind has a bigger body weight for 2.3 kg and bigger growth for 0.8 kg on dog who feeding with dehydrated food without additives.
- Female dog MP 50041 feeding with dehydrated food without additives on 6 month age has a body weight of 34.5 kg with growth of 6.7 kg, than the female dog MP 50044 feeding with dehydrated food with additives on 6 month age has a body weight of 37.3 kg with growth of 8 kg, that mind has a bigger body weight for 2.8 kg and bigger growth for 1.3 kg on dog who feeding with dehydrated food without additives.
- Female dog MP 50042 feeding with dehydrated food without additives on 6 month age has a body weight of 34 kg with growth of 6 kg, than the female dog MP 50045 feeding with dehydrated food with additives on 6 month age has a body weight of 37.3 kg with growth of 8.1 kg, that mind has a bigger body weight for 3.3 kg and bigger growth for 2.1 kg on dog who feeding with dehydrated food without additives.
- Three dogs feeding with dehydrated food without additives on 6 month age have a average body weight of 34.83 kg with growth of 6.57 kg, than the three dogs feeding with dehydrated food with additives on 6 month age have a body weight of 37.63 kg with growth of 7.97 kg, that mind has a bigger body weight for 2.8 kg and bigger growth for 1.4 kg on dogs who feeding with dehydrated food without additives.

General conclusion for all research is fact that the group dogs who feeding with dehydrated food with additives (carbohydrates and calcium) for all period of growth from 3 to 6 month age have a bigger average body weight and bigger average growth comparied to dogs feeding with dehydrated food without additives.

LITERATURE

1. Bauer M. (1992) KINOLOGIJA 1-Uzgoj i njega pasa, Zagreb
2. Broom D.M and Johnson K.G. (1993) Stress and Animal Welfare. Springer Publishing
3. Daghistani M. (1996) Osnovi Kinologije. Kinoloski Savez Jugoslavije. Beograd
4. Djordjevic N., Makaevic M., Grubic G., Jokic Z. (2000) Ishrana domacih i gajenih zivotinja
5. Fowler M.E (1986) Zoo and Wild Animal Medicine. Ed W.B.Saunders Co Philadelphia
6. FCI-International Cynological Federation. Breed standards
7. Jovanovic R., Jordanoski N. (1994) Ishrana i produktivni bolesti domacih zivotinja. Poljoprivredni Fakultet, Univerzitet u Novom Sadu
8. Jovanovic R., Dujic D., Glamocic D. (2000) Ishrana domacih zivotinja. Stilos-Novi Sad
9. Jovanovic S., Savic M., Trailovic R. (2000) Stocarstvo I. Fakultet Veterinarske Medicine, Univerzitet u Beogradu
10. Jurgens, M. H. (1996) Animal Feeding and Nutrition. Kendall/Hunt Publishing Company
11. Kelems, R. O., Church D. C (1997) Livestock, Feeds & Feeding. 4th Edition
12. Kolarski D. (1995) Osnovi ishrane domacih zivotinja. Naucna knjiga, Beograd
13. McDowell, L.R. (1992) Minerals in Animal and Human Nutrition, New York, Academic Press
14. McDowell, L.R. (2000) Vitamins in Animal and Human Nutrition, Iowa, University Press

Science & Technologies

15. Morrison, F. B. (1956) Feeds and Feeding, 22nd ed. The Morrison Publishing Company. Ithaca, NY
16. NRC-National Research Council (1980) Mineral Tolerance of Domestic Animals, Washington, D.C., National Academy Sciences
17. Obravec C. (1990) Osnovi ishrane domacih zivotinja. Naucna knjiga, Beograd
18. Parker, H.G, Kim L.V., Sutter N.B, Carlson S. (2004) Genetic Structure of the Purebred Domestic Dog, Science, 304: 1160-1164
19. Pavlicevic A., Grubic G., Jokic Z. (1999) Ishrana domacih zivotinja, divljaci i riba (prirucnik). Poljoprivredni Fakultet, Beograd-Zemun
20. Randall S.O. (1996) Animal selection and breeding techniques that create diseased populations and compromise welfare. Journal of American Veterinary Association, 208, 1969-1975
21. Savic M., Jovanovic S., Vegara M (2007) STOCARSTVO-Farmske i socijane zivotinje. Fakultet Veterinarske Medicine, Univerzitet u Beograd
22. Sevkovic N., Pribicevic S., Rajic I. (1991) Ishrana domacih zivotinje. Naucna knjiga, Beograd
23. Sinovec Z, Sevkovic N. (1995) Praktikum iz ishrane domacih zivotinje. Fakultet Veterinarske Medicine, Univerzitet u Beograd
24. Trailovic R. D. (1999) Gastroenterologija pasa i macaka. Fakultet Veterinarske medicine, Univerzitet u Beogradu.
25. Vila C., Wayne R. K. (1997) Multiple ancient origins of domestic Dog. Science, Vol.276
26. Wilmut I., Haley C.S., Woolliams J.A (1999) Impact of Biotechnology on Animal Breeding. Anim. Reprod. Sci., 28, 149-162.