Canadian Journal of
pure&applied
sciences

Short Communication

DETERMINATION OF KARS SHEPHERD DOG RAISED IN TURKEY

*Orhan Yilmaz[1] and Mehmet Ertugrul[2]
[1]Igdir University, Faculty of Agriculture, Department of Animal Science, Igdir-Turkey
[2]Ankara University, Faculty of Agriculture, Department of Animal Science, Ankara-Turkey

ABSTRACT

This present study was investigated the phenotypic traits of the Turkish Kars (Caucasian) Shepherd Dogs raised in Turkey comparing with some other native breeds of Turkey. To this end, a total of 52 (34 male and 18 female) dogs was analyzed using the Minitab 15 statistical software programs using ANOVA and Student's t-Test. Descriptive statistics and comparison results for live weight 44.6±1.03 kg, and height at shoulders 72.4±0.73, height at rump 71.1±0.77, body length 87.3±1.02, heart girth circumference 84.7±0.85, chest width 31.3±0.36, and cannon circumference 12±0.14 cm respectively. In this study the frequencies of body coat color of the sampled Kars dogs, as percentages, for brown was 30.8%, pied 23.1%, black 21.2%, roan 13.5%, and white 11.5% respectively. The overall results of the study demonstrated that Turkish Kars Shepherd dogs had a very close resemblance to the Turkish Kangal (Karabash) and Akbash Shepherd dogs related with body sizes.

Keywords: Native breed, phenotypic trait, live weight, body measurement, coat color.

INTRODUCTION

Dogs' value to the early human hunter-gatherers led to them to quickly become ubiquitous across world cultures. Dog is the first domesticated animal in prehistoric times even though among scientist there is no full agreement on where and when dogs (*Canis familiaris*) originated (Clutton-Brock, 1995; Yilmaz and Ertugrul, 2012). A genetic evidence for an East Asian origin of domestic dog was found in China about 15,000 years ago (Savolainen *et al*., 2002). In Turkey Belli (2006) revealed that hunting seen with dog about 15.000 years ago rock carving in village of Calli, county of Kagizman, province of Kars, Turkey. The rock carving showed that dogs used to use to hunt deer and/or wild goats in ancient times (Belli, 2009; Yılmaz, 2007b; Yilmaz and Ertugrul, 2012). Currently in the world there are more than 400 dog breeds (Pugnetti, 2001). In dog species, guardian dogs are dogs bred to defend people and their possessions (Yılmaz, 2006). They are generally large, rugged and impressive in the body. They possess great endurance and agility. These dogs are tall and powerful, yet not massive in build. This magnificent ancient working dog presents an impression of functional utility without exaggerated features. Large size is important, but correct breed type, soundness of movement, overall balance with correct temperament should be given precedence so as to preserve working ability. Flock guardian dogs show an alert, territorial and protective temperament of sheep, goats and their human family. Their possessive natural protective instinct is calm, noble, courageous, steady, intelligent, sensitive and affectionate with its own family and flock, loyal, proud, self-assured and independent (Sims and Dawydiak, 1990; Yilmaz, 2006).

In Turkey there are several native dog breeds, three of which are livestock guardian dogs listed in table 1. The Turkish Kangal (Karabash) Shepherd (TKnS) is the most common dog breed of Turkey. It is not only bred in Turkey, but also spread to lots of countries of the world, including continents of North America, Europa, Africa and Australia. They are raised in all continents except in the South America. Other breeds are generally local breeds. The Turkish Akbash Shepherd is located in Ankara, Afyon, Eskişehir and Konya provinces. The Kars (Caucasian) Shepherd (TKrS) is mainly seen in the east of Turkey. The Turkish Tazi (Sighthound) (TT) is largely raised especially in two provinces, Konya and Sanliurfa. The Tarsus Catalburun (Fork-nose) (TC) dogs is only found in the province of Icel. Dikkulak (Erect-ear) or Zagar (D/Z) dog is located in a same place in the east of Turkey where TKrS dogs are raised. In the province of Karaman there is a breed of Karaman Dog. In the northeast of Turkey there are also three local dog breeds. One of them is Zerdava dog which is a working type and a medium size dog breed. It is mainly bred in the provinces of Trabzon, Rize and Artvin. The second one is Fino of Tonya which bred in the provinces of Trabzon. This breed is a small size toy dog. The last one is Rize Koyun (Sheep) dog which is another flock protection dog breed in the provinces of Rize and adjacent provinces (Yilmaz, 2006; Yilmaz, 2007a; Yilmaz, 2011a; Yilmaz, 2011b; Yilmaz, 2011c; Yilmaz, 2011d).

*Corresponding author email: zileliorhan62@hotmail.com

The TKrS Dog is a protecting dog with a herd of cows, a flock of sheep and goat, but it is not a herding dog. The main duty of Kars dog is to protect the flock, its owner/shepherd and his property from predators and to avoid intruders. The Kars dog has a good body constitution. All colors can be seen even bicolor and tricolor. This breed is the potential dangers of strangers. Kars Dogs are very tough, healthy and strong dogs. They do not seem to suffer too many illnesses because of good adaptation ability in harsh climate and geographical condition of East Anatolia (Yılmaz, 2007b).

The aim of this study is to present some phenotypic traits of Turkish Kars (Caucasian) Shepherd Dogs by minding sex, region, age and coat color factors and by comparing with other Turkish dog breeds.

MATERIALS AND METHODS

Experimental animals
The TKrS dogs in this study were surveyed between October 2010 and February 2011 in the provinces of Agri (39º43'N; 43º03'E), Ardahan (41º07'N; 42º42'E), Artvin (41º11'N; 41º50'E), Erzurum (39º54'N; 41º16'E), Igdir (39º55'N; 44º03'E), Kars (40º35'N; 43º06'E), and Van (38º30'N; 43º21'E) (www.googleeearth.com). A total of 52 dogs, 34 male and 18 female, was studied. The dogs were aged between 2 and 8 years, and divided into three age groups: 2-3 years, 4-5 years, and 6-8 years. In the first group there were 10 males and 7 females; in the second group there were 12 males and 7 females; and in the third group there were 12 males and 4 females. The ages of the dogs were determined from the information given by their owners.

Measurements
The sampled dogs were weighed for live weight (LW) with a portable spring scale. Linear measures such as height at shoulders (HS), height at the rump (HR), body length (BL), and chest depth (CD) were measured using a measuring stick calibrated in centimeters. Other linear measures such as hearth girth circumferences (HGC), and

cannon circumferences (CC) were measured using a graduated plastic tape (Kirmizi, 1991).

Statistical analysis
The data obtained were analyzed using the Minitab 15 statistical software program. Descriptive statistics for body dimensions were analyzed using ANOVA and Student's T-Test that also determined the impact of sex, country and age group on the response variables of LW, HS, HR, BL, HGC, CD, and CC (Anon, 2011).

RESULTS AND DISCUSSION

The effects of sex, region, age and coat color on phenotypic traits were given in table 2. Between male and female dogs there were no significant differences in all morphological traits. For all results obtained male dogs yielded higher values than females except for the traits of BL and CC. For those traits female dogs yielded higher values than males.

The impacts of region on live weight and body sizes were also given in table 2. The dogs raised in Erzurum and Van yielded the lowest values and significantly different from the others (P<0.01). The TKrS dogs in the provinces of Agri and Artvin were significantly different from others on measurements for BL (P<0.01). The dogs raised in Artvin yielded the lowest and the dogs in Agri the highest values.

With respect to ages, the descriptive statistics and comparison results are given in table 2. Among the three age groups, 1-2 year-old TKrS dogs were significantly different from the other two groups of dogs for the traits of LW, HS, HR (P<0.01), BL, and HGC (P<0.05). After 3 years, there is minor difference in all traits. It can be concluded that the TKrS dogs grow up to 2-3 years of age, and after that there is only minor growth.

In this study the frequencies of body coat color of the sampled Kars dogs, as percentages, for brown 30.8%, pied 23.1%, black were 21.2%, roan 13.5%, and white

Table 1. Some morphological traits of various Turkish Breeds of dogs.

	LW (kg)	HS (cm)	HR (cm)	BL (cm)	HGC (cm)	CD (cm)	CC (cm)
TKnS* (Yilmaz 2007)	45.9	74.8	73.8	84.5	86.2	31.6	13.2
TAS* (Anon 2002[a])	45	75.3	74.2	81.8	86.5	32.6	13.3
TKrS* (Anon 2002[b])	75-110(♂) 60-100(♀)	70-100(♂) 65-90(♀)					
TT* (Yilmaz 2011[c])	18.4	62	62.2	60.3	63.3	22.8	10.2
TC* (Yilmaz 2011[d])	21.7	48.5	48.5	49.1	64	20.8	10.5
D/Z* (Yilmaz 2011[a])	10.6	27.8	29.1	46.3	50.9	21.8	9.5

* TKnS= Turkish Kangal (Shepherd), TAS= Turkish Akbas Shepherd, TKrS= Turkish Kars (Shepherd), TT= Turkis Tazi, TC= Tarsus Catalburun, D/Z= Dikkulak (erect-ear)/Zagar.

Table 2. Descriptive statistics and comparison results of the phenotypic traits of Turkish Kars (Caucasian) dogs for different sexes, regions, ages and coat colors.

Factors	Traits		LW (kg)	HS (cm)	HR (cm)	BL (cm)	HGC (cm)	CD (cm)	CC (cm)
Sex	Overall (n=52)	$\bar{X} \pm S_{\bar{X}}$	46.6±1.03*	72.4±0.73	71.1±0.77	87.3±1.02	84.7±0.85	31.3±0.36	12.0±0.14
	Male (n=34)	$\bar{X} \pm S_{\bar{X}}$	45.3±1.17	72.6±0.78	71.6±0.75	86.5±1.20	85.2±0.98	31.5±0.43	11.8±0.19
	Female (n=18)	$\bar{X} \pm S_{\bar{X}}$	43.3±2	71.9±1.55	70.3±1.72	88.7±1.89	83.7±1.62	30.8±0.64	12.3±0.18
Region	Agri (n=6)	$\bar{X} \pm S_{\bar{X}}$	43.3±1.82	73.5±1.98	71.8±1.56	92.7bc±2.06	81.3±2.62	33.1±0.52	11.5±0.56
	Ardahan (n=7)	$\bar{X} \pm S_{\bar{X}}$	48.3±3.70	71.7±1.71	71.6±1.95	84.4b±2.53	86.3±1.55	31.1±1.36	12.3±0.29
	Artvin (n=5)	$\bar{X} \pm S_{\bar{X}}$	47.4±2.69	71.4±1.36	71±1.30	77a±2.43	87.8±2.13	31.2±0.86	12.8±0.20
	Erzurum (n=5)	$\bar{X} \pm S_{\bar{X}}$	39.2±2.08	69±2.05	66.8±2.31	85.2b±1.71	81±1.73	31±0.89	11.8±0.34
	Igdir (n=9)	$\bar{X} \pm S_{\bar{X}}$	45.2±3.64	72.9±2.20	72.1±2.43	89.8bc±3.19	86.3±2.59	31.9±1.02	12.1±0.38
	Kars (n=17)	$\bar{X} \pm S_{\bar{X}}$	44.7±1.40	74.2±1.30	72.3±1.39	89.2b±1.35	85.3±1.55	30.9±0.52	11.9±0.26
	Van (n=3)	$\bar{X} \pm S_{\bar{X}}$	40.3±3.38	67.3±2.85	66.7±2.60	85b±2.89	80±1.53	28.3±1.86	11.5±0.50
Age	2-3 (n=17)	$\bar{X} \pm S_{\bar{X}}$	39.8a±1.32	68.5a±1.08	67.5a±1.14	83.6A±1.30	81.4A±1.22	30.2±0.53	11.8±0.21
	4-5 (n=19)	$\bar{X} \pm S_{\bar{X}}$	46.7b±2.05	74.3b±1.16	72.9b±1.32	89.3B±1.70	86.4B±1.37	31.4±0.65	12±0.26
	6-8 (n=16)	$\bar{X} \pm S_{\bar{X}}$	47.3b±1.15	74.3b±1.07	72.9b±1.06	88.7B±2.02	86.1B±1.56	32.1±0.60	12.2±0.27
Coat Colour	Pied (n=12)	$\bar{X} \pm S_{\bar{X}}$	45.3±2.37	72.8±1.54	71.2±1.69	88.1±1.42	83.9±1.51	31.4±0.52	11.7±0.30
	White (n=6)	$\bar{X} \pm S_{\bar{X}}$	45.8±2.96	73.3±1.69	72.2±1.51	87.3±4.68	88.7±1.93	31.3±1.09	12.4±0.38
	Brown (n=16)	$\bar{X} \pm S_{\bar{X}}$	43.4±1.70	72.5±1.48	70.8±1.44	85.8±1.99	84±1.37	31.1±0.76	12.2±0.22
	Roan (n=7)	$\bar{X} \pm S_{\bar{X}}$	48.7±3.61	74.7±2.21	73.7±2.66	88.6±3.64	87.9±3.17	31.7±1.20	12.3±0.49
	Black (n=11)	$\bar{X} \pm S_{\bar{X}}$	42.2±1.78	69.9±1.30	69.5±1.43	87.6±1.60	82.3±1.86	31.1±0.74	11.6±0.32

a, b = P<0.01; A, B = P<0.05
* There were no significant differences between means showed by the same letters of alphabet in the same line and factor group.

11.5% respectively. For coat color factor there were no significant differences among TKrS dogs for all traits.

In this study observed results (Table 2) were compared with other native dog breeds of Turkey (Table 1). According to the results the TKrS, TAS and TKnS dogs were almost similar to the traits of LW, HS, HR, BL, HGC, CD, and CC. The values of TSI seem quite exaggerated and suspicious for the traits of live weight and height at the shoulders TKrS dogs were twice heavier than TT, TC and four times heavier than D/Z dogs related to live weight. For other traits of HS, HR, BL, HGC, CD and CC results of TKrS were significantly higher than results of TT, TC, and D/Z dogs.

According to the results obtained in this research, Turkish Kars (Caucasian) Shepherd (TKrS) dogs are big-size livestock guardian dogs.

CONCLUSION

The overall results of this study demonstrate that TKrS dogs have a very close resemblance to the TKnS and TAS dogs for body dimensions. It can also be concluded that TKrS dogs are much bigger than the other Turkish dog breeds of TT, TC, and D/Z. The TKrS dogs grow up to 2-3 years of age and after then there is only minor growth. This suggests that TKrS dog reaches mature body weight

and size at around 2-3 years of age. There were no significant differences among dogs 2-3 years of age.

REFERENCES

Anonymous. 2002[a]. Damizlik Hayvanlar – Akbas Turk Coban Kopegi, Turk Standartlari Enstitusu, No: 11471 TS 12891, Ankara.

Anonymous. 2002[b]. Damizlik Hayvanlar – Kars Turk Coban Kopegi, Turk Standartlari Enstitusu, No: 11472 TS 12892, Ankara.

Anonymous. 2011. Minitab 15 Computer Program.

Belli, O. 2006. Anadolu ve dünyanın en eski avcı köpek resimleri. Av ve Doğa Derg 17-18 pp.

Belli, O. 2009. Yeni keşfedilen Urartu sulama tesisleri (2003-2008). II. International symposium of Mount Ararat and Noah's Ark., 12-34 pp., 8-10 October 2008, Doğubeyazıt, Ağrı, Turkey.

Clutton-Brock, J. 1995. Origins of the Dog: Domestication and Early History. In: The Domestic Dog, its Evolution, Behaviour and Interactions with People. Ed. Serpell, J. Cambridge University Press. 7-20.

Kirmizi, E. 1991. Comparisons Between Turkish and German Shepherd Dog Breeds Growth and Survival Rates, Reproductive Performance and Body Traits. Ph.D thesis. Istanbul University, Istanbul. pp114.

Pugnetti, G. 2001. Kopek Ansiklopedisi. Arkadas Yayinlari, Ankara.

Savolainen, P., Zhang, Y-P., Luo, J., Lundeberg, J. and Leitner, T. 2002. Genetic evidence for an East Asian origin of dogs. Science. 298:1610-1613.

Sims, DE. and Dawydiak, O. 1990. Livestock Protection Dogs-Selection, Care and Training. OTR Publications. Alabama, USA.

Yılmaz, O. 2006. Breeds of Livestock Protection Dogs (unpublished PhD seminar). Ankara University, Ankara.

Yılmaz, O. 2007[a]. Some Morphological Characteristics of Kangal Dogs Raised in Various Regions of Turkey. Ph.D thesis. University of Ankara, Ankara. (unpublished Ph.D thesis).

Yılmaz, O. 2007[b]. Turkish Kangal (Karabash) Shepherd Dog. Impress Printing Comp. Ankara.

Yilmaz, O. and Ertugrul, M. 2011[a]. Some Morphological Traits of the Zagar (erect-ear) Dog in Turkey. Igdir U. Fen Bilimleri Enstitusu Dergisi. 1(2):107-112.

Yilmaz, O. and Ertugrul, M. 2011[b]. Spread Story of Kangal (Karabash) Shepherd Dogs in The World. Igdir U. Fen Bilimleri Enstitusu Dergisi. 1(3):117-120.

Yilmaz, O. and Ertugrul, M. 2011[c]. Some morphological characteristics of Turkish Tazi (Sighthound). Journal of Animal and Plant Sciences. 21 (4):794-799.

Yilmaz, O. and Ertugrul, M. 2011[d]. Some Morphological Characteristics of the Tarsus Fork-nose Dog in Turkey. Bulgarian Journal of Agricultural Science, Bulgaria. 18(1):111-115.

Yilmaz, O. and Ertugrul, M. 2012. Determination of Akbash Shepherd Dog raised in Turke. Bitlis Eren University Journal of Science and Technology. 2:6-9.

www.googleearth.com (accessed on 07.05.2011)