

NUTRITIONAL PRACTICES ADOPTED BY THE DOG OWNERS IN THE FATEHGARH SAHIB AND LUDHIANA DISTRICTS OF PUNJAB

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ABSTRACT

A survey was conducted to study the nutritional practices followed by dog owners of Fatehgarh Sahib (FGS) and Ludhiana (LDH) districts of Punjab. For this, sixty four (33 from urban and 31 from rural) and seventy four (35 from urban and 39 from rural) dog owners of Fatehgarh Sahib (FGS) and Ludhiana (LDH) districts of Punjab were surveyed. Quantity of food items fed to dogs such as milk products, curd, and dal were higher ($P<0.05$) in LDH than that of FGS district. In rural FGS, the quantity of milk products and bones offered to the pet dogs was higher ($P<0.05$) than that offered in urban FGS, whereas the amount of sweets and vegetables offered was higher ($P<0.05$) in the urban FGS district. Similarly, in rural LDH, the quantity of the milk products and chapatti offered to the pet dogs was higher ($P<0.05$) than that offered in the urban areas, however, the amount of rice offered was higher ($P<0.05$) in the urban LDH. More than 59.7% dog owners prefer to offer mixed feed in both districts. Based on the data available, it is clearly indicated that feeding practices followed in rural/urban areas of FGS and LDH districts of Punjab closely followed the trend of food offered by the dog owners without much scientific feeding.

Keywords: Dog, Fatehgarh Sahib, Feeding practices, Ludhiana, Survey

The role of the companion animals is very crucial in human life as they provide a positive impact on both the emotional and physical health of people with sedentary lifestyle. The use of nutritionally complete and balanced commercial diets has been cited as a contributing factor for longer life spans in pets (Kraft, 1998). The incidence of various health problems has been declined in pets fed a commercial diet compared to pets fed homemade vegetable or raw meat diets (Rahaman and Yathiraj 2000). More than 90% of dogs in the United States and Australia consume commercial pet food for at least half their intake (Lauamme *et al.*, 2008). Indian household dog population is increasing by 26% every year and about 17% of the households own a pet dog. The dog population in Punjab is 4,70,558 (Livestock Census. 2012). Currently, no data have been available regarding the nutritional and managerial practices adopted by dog owners in Fatehgarh Sahib and Ludhiana districts of Punjab. Therefore, this study was planned with the objective to determine the nutritional and managerial practices adopted by dog owners.

MATERIALS AND METHODS

Survey Proforma: A sample survey proforma was designed and pretested by conducting survey at TVCC, GADVASU, Ludhiana. After thorough deliberations, a well-designed questionnaire having queries regarding the feeding practices followed by the dog owners such as kind of feed, quantity and number of times in a day feed was offered to a dog, vegetarian and non-vegetarian feedstuffs etc. fed raw or cooked. Besides this, some managerial and health aspect like, vaccinations, deworming, body condition score etc. were also made part of this survey

proforma.

Selection of dog owners: A total of 138 dog owners were surveyed from Fatehgarh Sahib and Ludhiana district. The survey was conducted by visiting owner's house and district polyclinics. Data from both the districts were uploaded and coded for analysis. Statistical analyses were performed by use of SAS (2011) software.

Source of food sample: The different dog food ingredients such as milk, chapatti, pulses, fruits, meat, eggs, vegetables etc. were collected from the owner at his/her location in an insulated container to maintain the freshness of food and were brought to the Department of Animal Nutrition. A total of 14 samples were collected from the owners of Fatehgarh Sahib and Ludhiana districts of Punjab.

Analysis of Dog food samples: A complete diet was prepared according to their proportion in the diet of dog as offered by their owner. The complete diet was dried and converted to powder form and stored for analysis. The feed samples were analyzed for proximate composition (moisture, crude protein (CP), ether extract (EE), total ash (TA), acid insoluble ash (AIA), crude fiber (CF), minerals (calcium and phosphorus), physicochemical properties (pH, free fatty acids and peroxide value) and microbiological counts (total plate count and coliform count).

RESULTS AND DISCUSSION

Analysis of the data of urban dogs (Table 1) of Fatehgarh Sahib and Ludhiana district indicates that non-significant ($P\leq 0.05$) difference was found in consumption of milk, milk product and curd in urban areas of both the Fatehgarh Sahib and Ludhiana districts. In urban areas of

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Table 1
Feeding practices followed by dog owners in Fatehgarh Sahib and Ludhiana districts

Variables	Fatehgarh Sahib (33)		Ludhiana (35)	
	Urban (33)	Rural (31)	Urban (35)	Rural (39)
Milk and Milk products				
Milk (ml)	247.00 ± 29.31	230.60 ± 38.36	197.10 ± 26.72	230.80 ± 26.08
Milk product (g)	115.2 ^B ± 33.95	224.20 ^A ± 46.81	150.00 ^B ± 32.14	357.70 ^A ± 41.73
Curd (ml)	197.00 ± 20.52	182.30 ^b ± 31.08	238.60 ± 26.18	279.49 ^a ± 27.72
Sweet (g)	14.85 ^X ± 5.04	4.84 ^b ± 2.67	7.14 ^Y ± 3.00	12.82 ^a ± 2.38
Chapatti (g)	2.97 ± 0.31	3.55 ^b ± 0.38	2.80 ^B ± 0.30	4.72 ^{a,A} ± 0.34
Dal (g)	31.82 ± 10.59	23.26 ± 9.49	42.00 ± 10.28	42.31 ± 8.46
Rice(g)	40.91 ± 10.43	43.55 ± 9.74	38.57 ^B ± 10.13	15.38] ± 8.68
Fruits and Vegetables				
Vegetables (g)	65.15 ^A ± 14.45	30.65 ^B ± 12.02	54.29 ± 14.03	34.62 ± 10.72
Non-Vegetarian				
Meat (g)	116.70 ± 25.89	104.80 ± 31.54	134.3 ± 25.17	132.10 ± 28.11
Bone (g)	18.18 ^B ± 6.82	45.16 ^{a,A} ± 19.19	15.71 ± 6.07	29.49 ^b ± 17.11
Egg (g)	1.45 ± 0.19	1.10 ± 0.22	1.46 ± 0.19	1.28 ± 0.22

Figures with different superscripts in a row differ significantly ($P \leq 0.05$)

X, Y depicts the significant difference in variable between urban areas of both districts.

a, b depicts the significant difference in variable between rural areas of both districts.

A, B depicts the significant difference in variable between urban and rural areas of both districts.

Fatehgarh Sahib (14.85 g), sweet consumption is higher ($P \leq 0.05$) than urban areas of Ludhiana (7.14 g). Feeding of chapatti, rice, dal and vegetables showed non-significant ($P \leq 0.05$) in both the districts. As far as the consumption of non vegetarian feedstuffs were concerned, it was observed that quantity of eggs, meat and bone offered to dogs, shows no significant ($P \leq 0.05$) difference between both the districts.

The perusal of data with regard to rural dogs of Fatehgarh Sahib and Ludhiana districts (Table 1) shows that there was non-significant ($P \leq 0.05$) differences in consumption of milk and milk product in rural areas of the both districts. The consumption of curd (279.49 ml) and sweet (12.82 g) was highest ($P \leq 0.05$) in rural areas of Ludhiana as compared to Fatehgarh Sahib district (180.40 ml and 4.84 g, respectively). Number of chapatti offered to dog was more ($P \leq 0.05$) in rural areas of Ludhiana (4.72) as compared to rural areas of Fatehgarh Sahib (3.55), whereas, bone consumption was higher in Fatehgarh Sahib than Ludhiana. Non-significant ($P \leq 0.05$) difference in feeding of dal, rice, meat and egg was observed in rural areas of both the districts.

Feeding practices adopted by Urban and Rural dog owners in Fatehgarh Sahib district is presented in Table 1. Feeding practices of milk products, vegetables and bone showed significant ($P \leq 0.05$) difference in this district among rural and urban owners. The consumption of milk products was more ($P \leq 0.05$) in rural area (224.20 g) dogs

in comparison to urban area (115.20 g) dogs. As far as the feeding of bones is concerned, the increase was in rural dog owners (45.16 g) as compared to urban dog owners (18.18 g). Non-significant ($P \leq 0.05$) differences were observed in rest of the parameters between rural and urban dog owners.

The perusal of the data for Ludhiana district showed that there was significant ($P \leq 0.05$) difference in consumption of milk products, chapatti and rice feeding between urban and rural dogs. The rural consumption of milk products showed similar trends as was in Fatehgarh Sahib district. The dog owners of this district offered more ($P \leq 0.05$) milk products to their dogs in rural areas (357.70 g) as compared to urban areas (150 g). The number of chapattis offered was more in the rural (4.72) as compared to urban dog owners (2.80). In rest of the other variables, non-significant ($P \leq 0.05$) differences were observed between rural and urban dog owners.

While scrutinizing the data, it was observed that, interestingly 40.3% of population of Fatehgarh Sahib and 40.8% of population of Ludhiana districts of Punjab offer homemade feed to their dogs while 59.7% population of Fatehgarh Sahib and 59.2% population of Ludhiana district offered both homemade and commercial feed to their pets. 31.3% of the population of Fatehgarh Sahib and 36.5% of Ludhiana feed only vegetarian diet to their dogs while 68.7% and 63.5 % of the population of Fatehgarh Sahib and Ludhiana districts offer mixed feed i.e. veg. as well as non veg. feed. Similar results have been reported by

Seneviratne *et al.* (2016), in which homemade diets were fed only to 42% of the dogs while commercial food accounts for 18% and both of these diets were fed to 40% of dogs. In another study, Laflamme *et al.* (2008) found that more than 90% of pet dogs were fed commercial foods; however, non-commercial foods accounts to at least 25% of the diet for 17.3% of dogs. 23.6% of dogs were fed with bones or raw foods at least on weekly basis.

The staple cereal used for feeding to dogs was same as consumed by the local population. Hundred percent of the dogs' owners surveyed of Fatehgarh Sahib and 91.9% of Ludhiana feed chapatti to their dogs however, only 34.4% and 27% of the dog owners feed rice to pets of Fatehgarh Sahib and Ludhiana district (Fig. 1). Dodd *et al.* (2019) found that pet owners were more likely to be vegetarian or vegan than previously reported for members of the general population because of their huge interest in feeding plant-based diets. Other important staple food of the state, milk is offered by 81.2% dog owners to their pets in Fatehgarh Sahib district and 75.7% in Ludhiana district. Seneviratne *et al.* (2016) also reported that in addition to normal diet, forty-nine per cent of dogs were fed milk as a separate meal. As far as the egg feeding is concerned, 71.9% of the Fatehgarh Sahib dog owners fed eggs and 48.4% fed meat to their dogs. 62.2% of Ludhiana dog owner fed eggs and 54.1% fed meat to their dogs. Sapowicz *et al.* (2016) reported that 62% of the owners reported feeding treats at least once daily and these include chews, fruits/vegetables, meat/cheese, peanut butter, and others. Davis *et al.* (2007) reported that 75% of the dogs were fed home-cooked dog food; 23% commercial dog food; 11.5% table scraps; 1.4% raw meat and 2.7% other diets.

The dog food samples obtained from Fatehgarh Sahib and Ludhiana districts were analyzed for various proximate parameters (Fig 2, 3). Fourteen feed samples were collected from urban and rural areas of both districts.

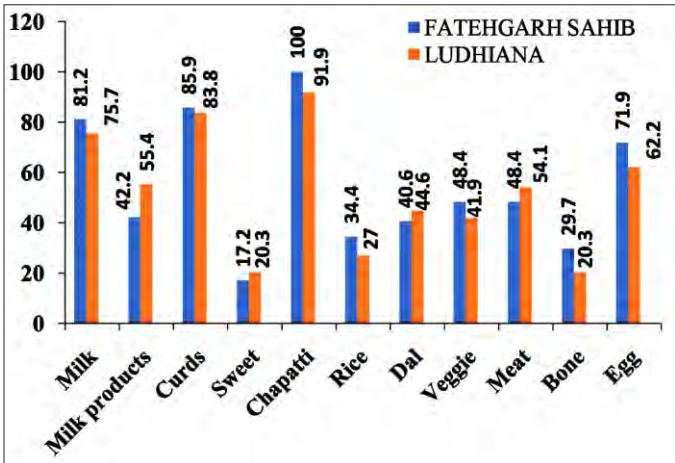


Fig. 1. Percent usage of food items by dog owners of Fatehgarh Sahib and Ludhiana

During analysis of feed sample of Fatehgarh Sahib district, it was found that 14.3% of feed samples were in range of 18-22% protein, 14.3% were having more than 22% protein and 71.4% were having less than 18% protein. Whereas, analysis of feed sample of Ludhiana district showed that 28.5% of feed samples were in range of 18-22%, 57.2% were having more than 22% protein and 14.3% having less than 18% protein. Following fat analysis of feed sample, it was noticed that 100% of the feed samples of the Fatehgarh Sahib were having more than 5% fat, whereas in Ludhiana district, 85.7% of the feed samples were having more than 5% fat, only 14.3% were having less than 5% fat. After fibre analysis, it was observed that 71.4% of feed samples of Fatehgarh Sahib district were having fiber less than 3.5%, 14.3% each of feed samples were having 3.5-6% and more than 6% fibre, respectively whereas, feed sample of Ludhiana district showed that 28.6% were having fibre more than 6%, 28.6% of feed sample were having fibre 3.5-6% and 42.8% were having fibre less than 3.5%. As far as calcium and phosphorus is concerned, 14.3% of feed samples of Fatehgarh Sahib district were having more than 0.5% calcium and 85.7% less than 0.5% calcium. 42.8% sample of Ludhiana district were having more than 0.5% calcium and 57.2% samples less than 0.5% calcium, 85.7% of

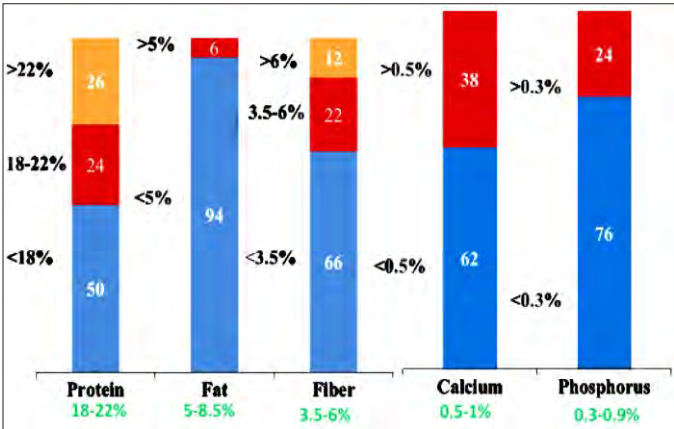


Fig. 2. Chemical analysis of feed: Ludhiana District (n=7)

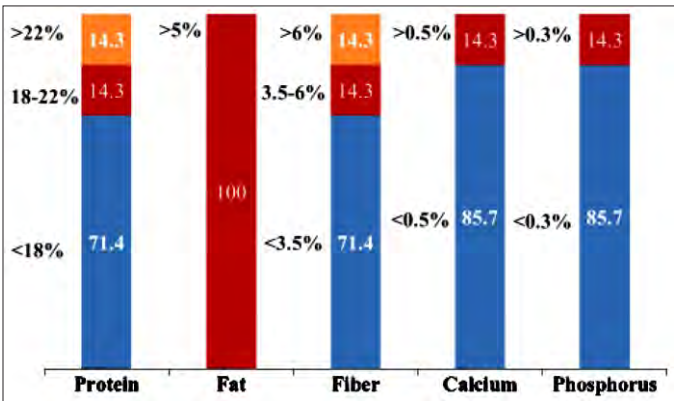


Fig. 3. Chemical analysis of feed: Fatehgarh Sahib District (n=7)

Table 2**Physio –chemical Properties of dog diet of Fatehgarh Sahib and Ludhiana districts of Punjab**

Parameter	Districts	
	Fatehgarh Sahib	Ludhiana
pH	2.97±0.16	4.13±0.12
FFA(<2%)	0.32±0.03	0.25±0.03
PV(1-2)	1.00±0.14	0.51±0.10
SPC (<7 log 10 cfu/gm)	2.55±0.10	2.40±0.07
Coliform (<3 log 10 cfu/gm)	1.16±0.30	1.17±0.22

samples were seen to have less than 0.3% phosphorus and 14.3% had more than 0.3% phosphorus in Fatehgarh Sahib district, whereas 71.4% of the feed samples were having less than 0.3% phosphorus and 28.6 more than 0.3% phosphorus in Ludhiana district.

The dog feed samples collected from different areas of Fatehgarh Sahib and Ludhiana districts were examined for physico-chemical (pH, free fatty acids and peroxide value) and microbiological (Standard Plate Count, SPC and coliforms count) parameters. Texture analysis of dog diet was not performed as all ingredients of diet were mixed, dried and powered. The data of dog samples (Table 2) obtained from both the districts revealed the pH value below 4 i.e. the samples were having acidic nature which may be due to the higher proportion of milk and milk products. Free fatty acids and peroxide value were below the prescribed limits which shows that the fat rancidity was very less which might be due to good quality of different food ingredients given to the dogs. The mean value of the microbiological parameters such as SPC and Coliforms were also well below the prescribed limits of the cooked dog foods.

As per the data available, it is concluded that mixed feed (>59%) is preferred choice by dog owners in Fatehgarh Sahib and Ludhiana district. Chemical analysis

shows that 70% of the feed samples do not fulfil the nutritional requirements (except fat) of dogs in Fatehgarh Sahib district.

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