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## Effect of season on compositional quality of Gangatiri cow milk

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### Abstract

The present study was undertaken on "Effect of season on compositional quality of Gangatiri cow milk" on healthy cows 10 (Gangatiri cow) selected from SHIATS dairy farm Allahabad. All cows were housed in tail to tail barn under similar management conditions. All sanitary precautions were undertaken to produce clean milk by dry full hand method of milking. Representative samples of 200 ml milk were collected in different seasons viz. summer, Rainy and winter season. Samples of fresh milk drawn from the udder were analyzed for fat, solid not fat (SNF), total solid (T.S.), water, acidity percent and sp.gr. It was concluded that the season had significant effect on Solid not fat (SNF), Total Solid (TS), Sp. gr, Acidity percentage and non-significant effect on fat and Water of cow milk.

**Keywords:** gangatiri cow, milk quality, season of milk

### Introduction

In India with the expansion in dairy industry it becomes necessary for its future glory to find out Indigenous cows breeds in different zone of our country. Therefore, our scientist started to see the most popular Gangatiri cow, which is mostly found in eastern zone of U.P. especially in Ganga watershed areas of Allahabad, Mirzapur, Varanasi & Baliya, Ganga river and nearby to its nearer area. Indigenous breeds of cows which were producing more milk either killed due ill treatment by their master or bad or poor management. Their milk production reduced gradually and they became poor to poorer, thus these breeds slowly and slowly became worthless and came to the danger zone. Gangatiri is an indigenous cattle breed of India and has been recognized as a separate breed by NBAGR-ICAR (Accession no. 03039). This is an important dual purpose breed of North India. Average daily milk yields of Gangatiri cow ranged between 4-6 liter per day. The lactation length is of 150-250 days. Inter calving period varies between 14-24 month. Coat color of Gangatiri cow is dull white. Muzzle is black, Hump and dewlap are medium.

Milk and its products are excellent source of vital nutrients. It is described as nature's nearly perfect food. Milk proteins offer a high quality animal protein in diet. Milk fat fractions are now being recognized to posses interesting anti-cancer properties. Minerals and vitamins contents of milk contribute significantly to human nutrition. Calcium is needed for protection against brittle bones in the latter part of life. It is now considered to play a vital role in controlling blood pressure in protecting colon from cancer. Milk and milk products from dairy animals are palatable and easy to digest therefore important human food. Milk, according to the prevention of food adulteration (PFA) rules, is the normal mammary secretion derived from the complete milking of a healthy milch animal without either addition there to or extraction there from. Free from colostrums, contains all the nutrients essential for growth i.e. water, fat, proteins, lactose, minerals vitamins and ash and has been recognized as a vegetarian food since ancient times and all Indians consume milk and milk products without reticence. It is especially beneficial for young ones as it contains nutrients for growth and development particularly a sufficient concentration of quality protein, mineral and vitamins. Especially vitamin A, riboflavin and vitamin B12 is also the richest natural source of calcium in the best available form, (Pathak 2003) [4].

### Materials and Methods

The present experiment entitled "Effect of season on compositional quality of Gangatiri cow milk of SHIATS dairy farms of Allahabad was carried out. The period of experiment was of one year from (November-2015 to October-2016). The cows were subjected to Californian mastitis test and 10 cows (Gangatiri cow) from SHUATS dairy farm with negative test were selected for the study. All experimental animals were housed in a tail to tail barn and managed under more or less similar managemental conditions. Sanitary precautions like clipping of long

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hair at udder and flank, grooming, washing of hind quarters, wiping udder with towel soaked in 2% Dettol solution, tying tail with legs etc. were taken care prior to collection of milk samples. Cows were milked by full and dry hand method of milking. Two streams of fore milk from each quarter of udder were discarded and a sample of 200 ml milk was collected directly into sterilized conical flasks and plugged immediately. Milk sample were brought to laboratory for chemical analysis and the fat, solid not fat (SNF), total solid (TS), water, Sp. gr. and acidity percent was determined as per AOAC (1995) [1].

#### **Factor for study Season of milk**

- a) Winter season (Nov-Feb)
- b) Summer season (March-June)
- c) Rainy season (July-Oct)

#### **Parameters of Study**

##### **Parameters determined in milk were as follows**

- (i) Fat percent
- (ii) Solid not fat(SNF) percent
- (iii) Total solid(TS) percent
- (iv) Water percent
- (v) Acidity percent
- (vi) Specific gravity (sp. gr.) percent

#### **Results and Discussion**

##### **Fat percent in milk**

The highest mean fat percent was recorded as 5.06 in milk of cows of winter season followed by 5.04 in milk of cows in rainy season and 5.0 in milk of cows in summer season at SHUATS dairy farm respectively, The differences in these were non-significant. Similar result were also reported by Bernadin (1972) [2], Sharma *et al.* (2001) [6], Prasad J. (2009) [5], Verma *et al.* (2010) [8], Salim Bahashwan (2014) [7].

##### **S.N.F. percent in milk**

The highest mean S.N.F percent was recorded as 9.26 in milk of cows of winter season followed by 9.13 in milk of cows in rainy season and 8.88 in milk of cows in summer season at SHUATS dairy farm respectively, the differences in these were significant. Similar result were also reported by Bernadin (1972) [2], Verma *et al.* (2010) [8].

##### **T.S percent in milk**

The highest mean T.S percent was recorded as 14.33 in milk of cows of winter season followed by 14.17 in milk of cows in rainy season and 13.88 in milk of cows in summer season at SHUATS dairy farm respectively, the differences in these were significant. Similar result were also reported by Bernadin (1972) [2], Verma *et al.* (2010) [8], Verma D.K. *et al.* (2018) [3].

##### **Water percent in milk**

The highest mean water percent was recorded as 86.11 in milk of cows of summer season followed by 85.82 in milk of cows in rainy season and 85.66 in milk of cows in winter season at SHUATS dairy farm respectively, the differences in these were non-significant. The differences in these were significant.

##### **Acidity percent in milk**

The highest mean acidity percent was recorded as 0.15 in milk of cows of rainy season followed by 0.14 in milk of cows in summer season and 0.14 in milk of cows in winter season at SHUATS dairy farm respectively, the differences in

these were significant. The differences in these were significant. Similar result were also reported by Verma D.K. *et al.* (2018) [3].

#### **Specific gravity in milk**

The highest mean Sp. gravity was recorded as 1.030 in milk of cows of winter season followed by 1.029 in milk of cows in rainy season and 1.028 in milk of cows in summer season at SHUATS dairy farm respectively, The differences in these were significant. Similar result were also reported by Verma D.K. *et al.* (2018) [3].

**Table 1:** Mean values of parameters in milk in different seasons at SHUATS dairy farms

<b>Parameters</b>	<b>Season at SHUATS dairy farm</b>			<b>Overall value in</b>
	<b>Winter</b>	<b>Summer</b>	<b>Rainy</b>	
Fat percent	5.06	5.0	5.04	NS
S.N.F percent	9.26	8.88	9.13	S
T.S. percent	14.33	13.88	14.17	S
Water percent	85.66	86.11	85.82	NS
Sp. gr.	1.030	1.028	1.029	S
Acidity percent	0.14	0.145	0.154	S

Note-S=Significant, NS=Non-Significant

#### **Conclusions**

It was concluded that the season had significant effect on Solid not fat (SNF), Total Solid (TS), Sp.gr, Acidity percentage and non-significant effect on fat and Water of cow milk.

Hence, to improve the compositional quality of milk, awareness farmers is needed with regard to scientific feeding and management practices as per season, age and live weight of animals to make a dairy business profitable.

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