

Studies on chemical composition of *Rabri* prepared from buffalo milk blended with khajur (*Phoenix dactylifera*) crush

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The present investigation on studies on chemical composition of *Rabri* prepared from buffalo milk blended with khajur (*Phoenix dactylifera*) crush was conducted during the year 2018-2019 at Department of Animal Husbandry and Dairy Science, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola with a view to study the chemical composition of khajur *Rabri*. The chemical composition of khajur *Rabri* was determined, in respect to fat, protein, total sugar, ash, moisture and total solid. Present investigation was carried out with five treatments and five replications. The treatment details were T₁ control sample, T₂ (97 % *Rabri* + 3 % khajur crush), T₃ (94 % *Rabri* + 6 % khajur crush), T₄ (91 % *Rabri* + 9 % khajur crush), and T₅ (88% *Rabri* + 12 % khajur crush). During the chemical analysis it was revealed that the fat content of khajur *Rabri* was 19.88, 19.20, 18.09, 17.17 and 16.26. 17.02, 17.15, 17.28, 17.41, 17.53, ash content was 3.02, 2.91, 2.73, 2.62, 2.51, moisture content was 44.18, 43.75, 43.26, 42.88, 42.26 and total solids content was 55.82, 56.25, 56.74, 57.12, 57.74, for the treatment T₁, T₂, T₃, T₄ and T₅, respectively. In short fat, protein and ash were normally decreased while total sugar, moisture and total solid were increased with increase in levels of khajur crush.

Key Words : Buffalo milk, Khajur crush, *Rabri*, Blending, Chemical composition

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INTRODUCTION

The fruits which are popular among the Indians, if added to the milk shake, not only improve the acceptability among average Indian people but also improve its nutritional quality with the addition of essential vitamin and mineral. In India, the production centers of milk and date fruit are in remote rural areas while the consumption

centers are in urban areas. Due to lack of appropriate facilities for the preservation and transportation of milk and non adoption of innovation in the post harvest technology in case of date fruit a lot of wastage and spoilage is generally observed. Considering this fact, it is need of the time to divert the attention and sincere efforts of scientists, food and dairy technologist and horticulturists towards the research and development of commercial utilization of products from khajur crush *Rabri*. In view of the above constraints khajur crush *Rabri* with its pleasant flavour, aroma and nutritive value is one of the answers to the above difficulties. Secondly, it also helps to increase the average consumption of milk and fruit (date fruit), which is far away from standards given by Nutritionists Advisory Committee, India. Present research

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topic was planned and conducted with main objectives to determine the chemical composition of *Rabri* prepared from buffalo milk blended with khajur crush.

METHODOLOGY

Clean fresh, whole buffalo milk was procured from Livestock Instructional Farm of Department of Animal Husbandry and Dairy science, Dr. PDKV, Akola was standardized at 6 per cent fat and utilized for preparation of *Rabri* blended with khajur crush. Good quality branded khajur (Lion) was purchased from the local market and used for the experimental purpose as per treatment. Uniform quality and brand was maintained for all replication. Approximately the required amount of khajur was cleaned and washed with clean water. The seeds were removed and pulp was extracted manually from well ripe fruits. The pulp extracted was converted into homogenous mass with the help of mixer. Clean crystalline cane sugar was purchased from local market and used @) 6% by weight of milk.

Treatment detail :

T₁ control sample, T₂ (97% *Rabri* + 3 % khajur crush), T₃ (94% *Rabri* + 6 % khajur crush), T₄ (91% *Rabri* + 9% khajur crush) and T₅ (88% *Rabri* + 12% khajur crush) with five replications.

Preparation of *Rabri*:

For preparation of *Rabri* method prescribed by De (2015); Gayen and Pal (1991) and Singh *et al.* (2014) was followed with certain modifications in the process as Gaikwad (2014) used for preparation of custard apple pulp blended *Rabri*.

Chemical analysis of khajur crush *Rabri* :

Khajur crush *Rabri* prepared by buffalo milk and khajur crush with different treatment combinations were subjected to chemical analysis, which comprised the determination of moisture, fat, protein, lactose, ash, total solid, moisture and SNF.

Fat content of khajur *Rabri* was determined as per Gerber's method described in IS 1224 (Part-1) 1958. Protein was determined as per method prescribed by Indian Standard Institute in BIS 1981 Handbook of Food Analysis, Dairy Products, Part 1. The lactose per cent was determined as per the procedures, recommended by IS : 1479 part I (1960). The ash content was

determined as per the procedure described by IS 1479 (PART -II), 1961. The percentage of total solids of custard apple *Rabri* was determined as per method given by Arora *et al.* (1992). Moisture was estimated by accurately weighing the 5g sample and subjected to oven drying at 105°C for 4 hr. It was again weighed after cooling in desiccators until constant weight. The resultant loss in weight was calculated as moisture content (AOAC, 1990).

Statistical analysis:

The data obtained during present investigation was statistically analyzed by adopting Completely Randomized Design (CRD) as described by Amble (1975).

OBSERVATIONS AND ASSESSMENT

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Chemical composition of khajur *Rabri*:

Khajur *Rabri* was subjected to chemical analysis for fat, protein, total sugar, ash, moisture and total solids. The results obtained were furnished under the Table 1.

Fat content of khajur *Rabri* :

It was observed from the data in Table 1 that the mean value of fat per cent of khajur crush *Rabri* was statistically significant. It indicate that fat content of khajur crush *Rabri* was affected due to addition of khajur crush. In all above treatment significant difference was noted due to addition of khajur crush which lowering fat contain of khajur *Rabri*. These might be increase in rate of addition of khajur crush which contain less fat. Pawar (2003) recorded the fat content in *Rabri* was decreased due to addition of mango pulp from 18.07 to 15.02 per cent. Jadhav *et al.* (2002) recorded the fat content in different combination of sapota *Rabri* and observed that fat content was decreased from 19.00 to 18.17 per cent. Thaware (2016) recorded that fat content was decreased due to addition of custard apple *Rabri* from 19.98 to 16.05 per cent. Gaikwad *et al.* (2015); Mete *et al.* (2017) and Surve (2017) also reported that fat content was decreased in milk shake, *Burfi* and *Basundi* due to addition of dates. These results were in agreement with present results.

Protein content of *Rabri* :

The data from the Table 1, it was revealed that, the protein content of khajur *Rabri* of different treatments varied from 10.01 to 8.44 per cent. The mean protein content of treatment T₁, T₂, T₃, T₄ and T₅ was 10.01, 9.61, 9.10, 8.93 and 8.44 per cent, respectively. Treatment T₁ (10.0%) was significantly superior over the treatments T₃, T₄ and T₅ and the treatment T₂ was at par with T₁. The treatment was statistically significant over the treatment T₅. It was observed that as the proportion of khajur pulp in the blend increase there was decreased in the protein content in *Rabri*. This might be due to less protein content in khajur pulp as compared to *Rabri*. These result were supported by, Pawar (2003) recorded that protein content in *Rabri* was decreased due to addition of mango pulp from 11.03 to 9.8 per cent. Jadhav *et al.* (2002) recorded that protein content in *Rabri* was decreased due to addition of sapota from 10.03 to 8.7 per cent. Thaware (2016) recorded that protein content in *Rabri* blended was decreased due to addition of custard apple pulp from 10.00 to 8.50 per cent. Gaikwad *et al.* (2015); Mete *et al.* (2017) and Surve (2017) also reported that protein content was decreased in milk shake, *Burfi* and *Basundi* due to addition of dates.

Total sugar content of khajur *Rabri* :

It observed from Table 1, that the mean total sugar of khajur *Rabri* for treatment T₁, T₂, T₃, T₄ and T₅ was 17.02, 17.15, 17.28, 17.41 and 17.53 per cent, respectively. The total sugar content in custard apple *Rabri* was varied from 17.02 to 17.53 per cent significant difference where observed between treatments for total sugar content of *Rabri*. It was observed that the total sugar of khajur *Rabri* was increasing with increasing the level of khajur crush

in the *Rabri*. Pawar (2003) recorded that lactose content in *Rabri* was increased due to addition of mango pulp from 16.20 to 17.03 per cent. Thaware (2016) recorded that total sugar content in *Rabri* was increased due to addition of custard apple pulp from 17.02 to 17.52 per cent. Jadhav *et al.* (2002) recorded that total sugar content in *Rabri* was increased due to addition of sapota *Rabri* from 16.8 to 17.4 per cent. Gaikwad *et al.* (2015); Mete *et al.* (2017) and Surve (2017) also reported that protein content was increased in milk shake, *Burfi* and *Basundi* due to addition of dates.

Ash content of khajur *Rabri* :

The ash content in khajur *Rabri* ranged from 3.02 to 2.51 per cent. The ash content of khajur *Rabri* of treatment T₁, T₂, T₃, T₄ and T₅ were 3.02, 2.91, 2.73, 2.62 and 2.51 per cent, respectively. The ash content of treatment T₁ was highest than rest of the treatments. The treatment T₁, T₂, T₃ and T₄ was significantly at par. But T₁ and T₂ treatments was statistically significant over T₅ treatment. Lowest ash content was found in treatment T₅ (2.51). From the above results it was observed that ash content of khajur *Rabri* decreased with increase in proportion of khajur crush in the *Rabri* because ash content in khajur pulp is lower. Pawar (2003) recorded that ash content in *Rabri* was decreased due to addition of mango pulp from 2.8 to 2.3 per cent. Jadhav *et al.* (2002) recorded that ash content in *Rabri* was decreased due to addition of sapota from 2.71 to 2.3 per cent. Thaware (2016) recorded that ash content in *Rabri* was decreased due to addition of custard apple from 3.01 to 2.50 per cent. Gaikwad *et al.* (2015); Mete *et al.* (2017) and Surve (2017) also reported that protein content was decreased in milk shake, *Burfi* and *Basundi* due to

Table 1 : Effect on chemical composition of *Rabri* prepared from buffalo milk blended with khajur crush (%)

Treatments (Part of control <i>Rabri</i> : parts of khajur crush)	Mean values of five replications in per cent					
	Fat	Protein	Total sugar	Ash	Moisture	Total solids
T ₁ (100)	19.88	10.01	17.02	3.02	44.18	55.82
T ₂ (97:03)	19.20	9.61	17.15	2.91	43.75	56.25
T ₃ (94:06)	18.09	9.10	17.28	2.73	43.26	56.74
T ₄ (91:09)	17.17	8.93	17.41	2.62	42.88	57.12
T ₅ (88: 12)	16.26	8.44	17.53	2.51	42.26	57.74
'F' test	Sig	Sig	Sig	Sig	Sig	Sig
S.E. ±	0.1528	0.0851	0.03612	0.02054	0.05451	0.05451
C.D. (P=0.05)	0.4509	0.2512	0.1065	0.06060	0.1608	0.1608

addition of dates.

Moisture content of khajur *Rabri*:

The moisture content of khajur *Rabri* ranged from 44.18 to 42.26 per cent. The total solids content of treatment T₁, T₂, T₃, T₄ and T₅ were 44.18, 43.75, 43.26, 42.88 and 42.26 per cent, respectively. The moisture content of khajur *Rabri* was highest in T₁ (44.18%) and lowest in T₅ (42.26%). Treatment T₅ (42.26) was significantly superior over the treatments T₁, T₂, T₃ and T₄. The treatment T₃ (43.26) was statistically significant over the treatment T₁ and T₂. There was increase in moisture content of khajur *Rabri* with increase in level of khajur crush in the blend and addition of cane sugar. Pawar (2003); Jadhav *et al.* (2002); Thaware (2016) also noted that in *Rabri* moisture content decrease due to addition of various fruit pulp.

Total solids of khajur *Rabri*:

The total solids content of khajur *Rabri* ranged from 55.82 to 57.74 per cent. The total solids content of treatment T₁, T₂, T₃, T₄ and T₅ were 55.82, 56.25, 56.74, 57.12 and 57.74 per cent, respectively. The total solids content of khajur *Rabri* was highest in T₅ (57.74%) and lowest in T₁ (55.82%). Treatment T₅ (57.74) was significantly superior over the treatments T₁, T₂, T₃ and T₄. The treatment T₃ (56.74) was statistically significant over the treatment T₁ and T₂. There was increase in total solids content of khajur *Rabri* with increase in level of khajur crush in the blend and addition of cane sugar. Pawar (2003) recorded that total solid content in *Rabri* was increased due to addition of mango pulp from 52.07 to 55.53 per cent. Jadhav *et al.* (2002) recorded that total solid content in *Rabri* was increased due to addition of sapota from 55.3 to 57.17 per cent. Thaware (2016) recorded that total solid content in *Rabri* was increased due to addition of custard apple pulp from 55.82 to 57.75 per cent. Gaikwad *et al.* (2015); Mete *et al.* (2017) and Surve (2017) also reported that protein content was increased in milk shake, *Burfi* and *Basundi* due to addition of dates. These results were in agreement with present results.

Conclusion:

On the basis of data obtained in the present investigation it is concluded that, fat, protein and ash contain was decreased with increasing in rate of addition

of khajur pulp and *vice versa*, while total solid and total sugar increased with increase in rate of addition of khajur pulp.

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