

Original Research Article

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Studies on Chemical Analysis of Goat Milk Basundi with Red Pumpkin Pulp

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ABSTRACT

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In the present study *basundi* was prepared with *Red Pumpkin Pulp*. The different levels of *red pumpkin pulp* 2.5, 5 and 7.5 per cent were tried in goat milk *basundi*. The requisite samples of *basundi* with different treatments were subjected for proximate analysis viz. fat, protein, Carbohydrate, moisture, total solid, sucrose and ash. The results obtained were statistically analyzed by using completely randomized design. It was observed that addition of *red pumpkin pulp* in goat milk *basundi* decreased (moisture 48.82 to 46.64 per cent, fat 10.64 to 9.80 per cent sucrose 16.89 to 16.20 per cent) and increased (protein 8.15 to 8.64 per cent, ash 1.85 to 2.70 per cent, carbohydrate 30.89 to 32.29 per cent and total solid 51.18 to 53.37 per cent) content significantly in treated product (T_1, T_2 and T_3) as compared to control (T_0).

Introduction

Goats are important component of livestock industries and play vital role in the social economic structure of economically weak, rural community Goat milk differs from cow or buffalo milk is having better digestibility, alkalinity, buffering capacity and certain therapeutic values in medicines and human nutrition (Haenlein 2004). Due to significant nutritional advantages of goat's milk, it is widely used to feed more starving and malnourished people in the developing world than cow's milk. There is mounting evidence

from consumer observations that suggests those who cannot tolerate cow's milk can tolerate goat's milk. An important four year survey of milk drinkers revealed that 66.8% of those consuming goat's milk did so for medical reasons in particular to overcome intolerance to cow's milk and 27.71% of those who consumed goat's milk stated that they received significant health benefits from the product (Morgan 2012). The superior digestibility of goat milk, the proper composition of fatty acids and its content of bioactive compounds seem to give properties suitable for treating or preventing certain

medical conditions. Goat milk also has higher proportions of polyunsaturated fat acid as well as conjugated linoleic acid. Short and medium chain fatty acids, as well as medium chain triacylglycerols have become established medical treatments for several clinical disorders. Goat milk is rich in medium chain triglycerides, which is one of the primary reasons that it facilitates improved nutrient absorption and energy production in the body. (Roy and Vadodaria 2006).

Basundi is traditional, concentrated and sweetened whole milk product having sweetish caramel and pleasant aroma, light to medium brown colour, thick body and creamy consistency with or without soft textured flakes that are uniformly suspended throughout the product. It contains all the solids of milk in an appropriate concentration plus additional sugar and a dry fruit is consumed directly as a delicious sweet dish (Pagote, 2003).

Among the different vegetables red pumpkin (*Cucurbita moschata*) belongs to family *Cucurbitaceae* is one of the best-known sources of beta-carotene, a powerful antioxidant that gives orange vegetables and fruits their vibrant colour. Red pumpkin is rich sources of vitamins-A, C, E and K.

It is excellent sources of many polyphenolic flavonoid compounds such as alpha, beta-carotenes, cryptoxanthin, lutein and zeaxanthin, carotenes converted into vitamin A inside the human body.

Biologist suggests pumpkins to be highly useful for treating hormonal disorders or adolescent behavior, menopause disorder and intestinal parasite. Hence considering the benefits of fiber in the diet, with respect to its nutritional and medicinal value present study was proposed on “Studies on Preparation of Goat Milk *Basundi* with *Red Pumpkin Pulp*.”

Treatment combinations

Following treatment combinations were considered for preparation of *basundi* with *red pumpkin pulp*.

T₀= *Basundi* from goat milk (control)

T₁= *Basundi* with 2.5 per cent of *red pumpkin pulp* by weight of goat milk

T₂= *Basundi* with 5.0 per cent of *red pumpkin pulp* by weight of goat milk

T₃= *Basundi* with 7.5 per cent of *red pumpkin pulp* by weight of goat milk

Physico-chemical analysis of *Shrikhand*

Determination of moisture, total solids, ash, sucrose

Determined by method as described in IS: SP (part XI) 1981.

Determination of fat

Determined by Gerber's method as in IS: 1224 (Part II) (1977).

Determination of protein

Protein content of *basundi* was determined by Microkjeldhal method as described in BIS (1981).

Determination of Carbohydrate

Carbohydrate content was estimated by subtraction method

Statistical analysis

The data were analyzed statistically by using Completely Randomized Design (CRD) as per Panse and Sukhatme (1985).

Results and Discussion

Mean chemical composition of *basundi* with different levels of *red pumpkin pulp*

The mean chemical composition for control *basundi* (T₀) and *basundi* with 2.5, 5 and 7.5 per cent *red pumpkin pulp* (T₀, T₁, T₂ and T₃) are presented in table 1.

Moisture content of *basundi*

Moisture content of T₀ (48.82) was significantly higher than the T₁, T₂ and T₃. Among the treatments (T₁, T₂ and T₃) per cent moisture decreased significantly as the level of *red pumpkin pulp* increased from 2.5 to 7.5 per cent. Significant decrease in moisture content in *basundi* with *red pumpkin pulp* could be due to the lower moisture content in *red pumpkin pulp* (53 gm/100gm). The result was in agreement with Raut *et.al*(2018)and Lahankaret *al.*, (2018).

Fat content of *basundi*

From the result it was observed that the fat content significantly decreased due to addition of different levels (2.5, 5 and 7.5 per cent) of *red pumpkin pulp* in *basundi*. Fat content of control was (10.64per cent) highest among all treatments. Significant decrease in fat content in *basundi* with *red pumpkin pulp* could be due to less fat content in *red pumpkin pulp* (2.3 gm/100gm).The results are in agreement with Bhutkaret *al.*, (2015), Gaikwad *et al.*, and Hajareet *al.*, (2016).

Protein content of *basundi*

Protein content of control *basundi* (T₀) and *basundi* with *red pumpkin pulp* (T₁, T₂ and T₃) was 8.15,8.31,8.46,8.64 per cent respectively. The result showed that protein content of control *basundi* (T₀) was significantly lower than the *basundi* with 2.5, 5 and 7.5 per cent

addition of *red pumpkin pulp* and treatment T₃ had highest protein (8.64 per cent) content. Among the treatments T₃ had significantly higher protein content than T₂ and T₁. This may be due to protein content in *red pumpkin pulp* (3gm/100gm). Similar findings were also observed by Kolhe (2003), Matkar (2006).

Ash content of *basundi*

The mean ash content in the finished product was 1.85,2.08,2.38,2.70 per cent for T₀, T₁, T₂ and T₃ respectively. From the result it was observed that the ash content of control (T₀)(1.85 per cent) was significantly lower than the T₂ and T₃.

Among the treatments (T₁, T₂ and T₃) ash content increased as the level of *red pumpkin pulp* increased from 2.5 to 7.5 per cent Higher ash content in *basundi* with *red pumpkin pulp* could be due to mineral content in *red pumpkin pulp* (15gm/100gm).The result is in agreement with Waghmare (2012), Gaikwad *et al.*, (2016) and Kapare (2017).

Carbohydrate content of *basundi*

It was observed that the carbohydrate content was increased significantly due to addition of different levels (2.5, 5 and 7.5 per cent) of *red pumpkin pulp* in *basundi*.

However, the carbohydrate content of T₃ (32.29 per cent) was significantly higher than the control (T₀) as well as treatment T₁.

Significant increase in carbohydrate content of *basundi* at higher level of addition of *red pumpkin pulp* could be due to carbohydrate content in *red pumpkin pulp* (66.6gm/100gm).The result is in agreement with previous research workers, Bankar (2011), Navale *et al.*, (2014).

Experimental Methodology

Fig.1 Flow diagram for preparation of *Basundi* with *Red Pumpkin Pulp*.

Basundi was prepared as per the method of Mukhekar, (2014).

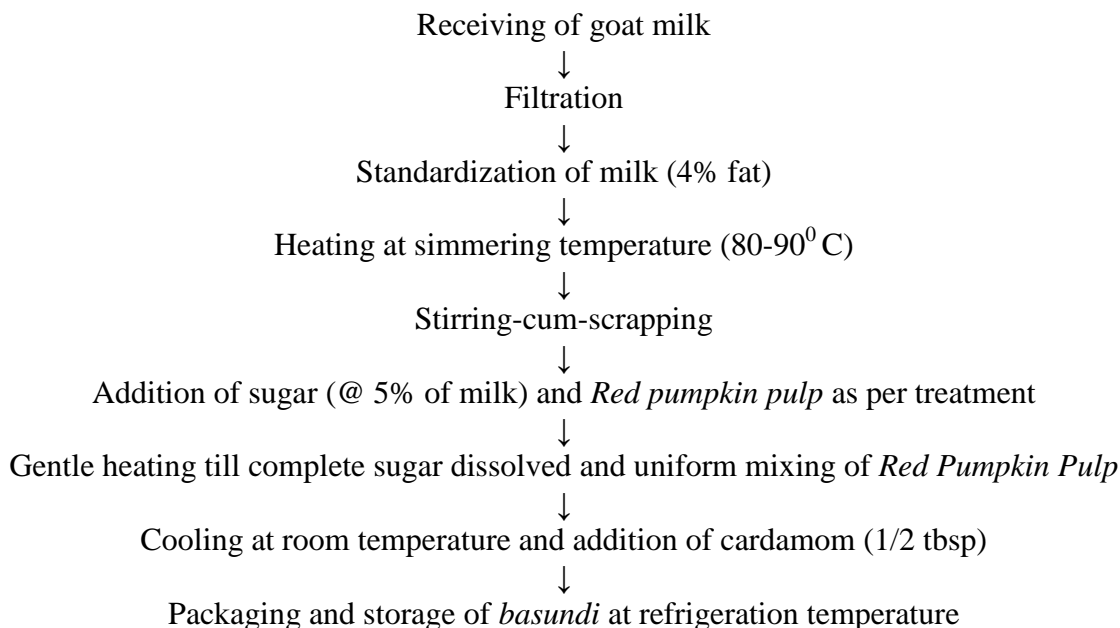


Table.1 Mean chemical composition of *basundi* with different levels of *redpumpkinpulp*

Sr. No.	Chemical constituents	T ₀	T ₁	T ₂	T ₃
1	Moisture (%)	48.82 ^a	47.94 ^b	47.17 ^c	46.64 ^{cd}
2	Fat (%)	10.64 ^a	10.30 ^b	10.00 ^c	9.80 ^d
3	Protein (%)	8.15 ^c	8.31 ^{bc}	8.46 ^b	8.64 ^a
4	Ash (%)	1.85 ^d	2.08 ^c	2.38 ^b	2.70 ^a
5	Carbohydrate(%)	30.89 ^d	31.78 ^c	31.99 ^b	32.29 ^a
6	Total solids (%)	51.18 ^d	52.06 ^c	52.83 ^b	53.37 ^a
7	Sucrose (%)	16.89 ^a	16.53 ^b	16.31 ^{bc}	16.20 ^{cd}

Total solids content of *basundi*

Total solid content of control *basundi* (T₀) was significantly lower (51.18) than the *basundi* with *red pumpkin pulp* T₁, T₂ and T₃ (52.06, 52.83, 52.37 per cent respectively). Moisture content directly influenced the total solid percentage; decrease in moisture content of product increases the total solid content. The highest total solid content was recorded in treatment T₃ (53.37 per cent) and lowest total solid content was recorded for treatment T₀ (51.18 per cent). However, among the treatments total solid content increased significantly as per cent level of *red pumpkin pulp* increase from 2.5 to 7.5 per cent. Increase in total solid content in treated product could be due to lower moisture content in *red pumpkin pulp*. The results are in agreement with Pawar (2011).

Sucrose content of *basundi*

It was observed that the sucrose content in control (T₀) and treatment T₁, T₂ and T₃ was 16.89, 16.53, 16.31, 16.20 per cent respectively. Among the treatment's sucrose content of T₀ (16.89) was highest where as T₃ (16.20).

From present investigation it can be concluded that the red pumpkin can be very well utilized for preparation of palatable, nutritional *basundi*. From the results of chemical analysis of goat milk *basundi* with addition of *red pumpkin pulp* (2.5, 5 and 7.5 per cent) it could be concluded that *red pumpkin pulp* could be incorporated up to 7.5 per cent in *basundi* without affecting sensory properties adversely.

Addition of *red pumpkin pulp* in *basundi* decreased moisture, fat, and sucrose content significantly in the finished product as compare to control. Protein, ash, carbohydrate and total solid content was increased significantly in treated product as compared to control.

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