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"Biochemical and comparative Study of Goat and Cow Milk from Latur Region"

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Abstract: All the parameters were done for fresh, boiled, preserved & boiled preserved milk of goat. Milking was carried early in the morning between 6.00 to 7.00 am. PH of Goat milk is less than 7 .So pH of goat and cow milk is slightly acidic. The fat content in goat milk ranged from 2.3 to 6.4 mg%. And the fat content in cow milk ranged from 3.0 to 5.4 mg%. As compared to cow milk fat content in goat milk is slightly higher than cow milk. That results also observed ("Simsek O" et.,al 2000)The protein content in goat milk ranged from 3.2to 3.9mg%. And in cow milk ranged from 2.9to 32.3 mg%. Protein content also slightly greater than cow milk. Density in goat milk ranged from 28.38 to 38.57-g/l. & in cow milk ranged from 28.30to 29.95 g/l. highest density was observed in boil milk of goat. Sodium content in goat milk ranged 417.9. To 570.6 ppm & in cow milk ranged from 497.5 to 585.0ppm. Sodium content in cow & goat milk same. Potassium content in goat milk ranged from 942.1 to 1192.9ppm & in cow milk ranged from 1030.2 to 1194.8ppm. That results also observed ("Barnes R. B et,,al 1945)

Keyword: Biochemical , comparative , boiled , Biotechnology.

INTRODUCTION

Milk is defined as the lacteal secretion obtained by the complete milking of one or more mammalian animals. Milk is one of the most carefully tested and heavily regulated foods available, one of the most effective. (Anonymouset.,al. 1990)

MATERIALS AND METHODS

The present study was conducted at Department of Biotechnology, Rajarshi Shahu Mahavidyalaya Latur. The samples of milk collected from Goats. 200 ml sterile bottles were used for the sample collection.

Milking RoutinesGoats were hand-milked twice a day. Milk samples were taken from morning and afternoon. The milking routine began with cleaning of the teats with water and then drying them with a towel.

Sample Analysis

The samples were transferred to the Manjra Milk Dairy Latur, where milk was analyzed for biochemical study (pH, Fat, Protein, Solid Not

Fat, Density, and Lactose) by using "Lactoscan milk analyze" . PH was determined by using pH meter. Fat content in milk can also analyzed by using "Gerber method" (Garaniya et.,al April 2012)

Fat test
Urea test
Soda test
Salt test
Macro elements Detection

The macro elements like sodium and potassium were determined by using flame photometer.

Micro elements Detection

The micro elements like Fe, Zn, Cu & Mn were analyzed by using atomic absorption spectroscopy.
PHThe samples were transferred to the Manjra Milk Dairy Latur, where milk was analyzed for biochemical study by using "Lactoscan milk analyze"
Protein The samples were transferred to the Manjra Milk Dairy Latur, where milk was analyzed for biochemical study by using "Lactoscan milk analyze"
SNF The samples were transferred to the Manjra Milk Dairy Latur, where milk was analyzed for biochemical study by using "Lactoscan milk analyze
Lactose The samples were transferred to the Manjra Milk Dairy Latur, where milk was analyzed for biochemical study by

RESULTS AND DISCUSSION

Fat, Protein, Solid Not Fat (SNF), Lactose and Density AnalysisThe results of pH, fat, protein, solid not fat (SNF), lactose and density ·using "Lactoscan milk analyze" DensityThe samples were transferred to the Manjra Milk Dairy Latur, where milk was analyzed for biochemical study by using "Lactoscan milk analyze"

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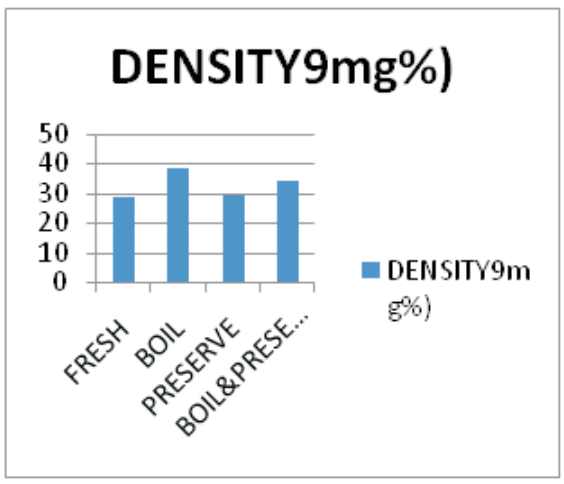
Goat	pH	Fat (mg %)	Protein (mg%)	SNF (mg%)	Lactose (mg%)	Density (gm/L)
Fresh Milk	6.7	6.4	3.9	8.8	5.6	28.38
Boil Milk	6.3	2.3	3.2	10.6	4.8	38.57
Preserve Milk	6.5	3.7	3.8	8.4	5.2	29.12
Boil & Then preservedmilk	5.9	3.1	3.5	9.7	4.5	34.40
COW Fresh Milk	6.9	5.4	3.3	8.3	4.4	28.67
Boil Milk	6.8	3.0	2.9	8.5	4.6	29.95
Preserve Milk	6.4	3.5	3.2	9.0	4.9	29.06
Boil & Then preserved	6.5	3.5	2.9	8.1	4.3	28.30

of cow's milk is showninTable1



PH: PH of goat milk ranged from 5.9to 6.7 and highest value was observed in fresh milk sample .as shown in graph1 PH of cow milk ranged from 6.4to 6.9.

Fat; The fat content in goat milk ranged from 2.3 to 6.4 mg% highest content was found in fresh milk sample as shown in graph 2. . The fat content observed in Fresh goat milk was higher than cow milk highest content was found in fresh milk sample that is 5.4 mg%

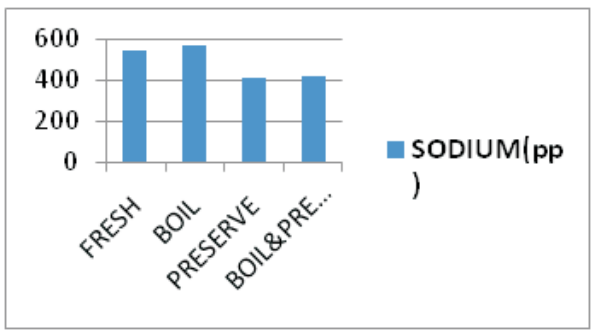
Protein; The protein content in goat milk ranged from 3.2to 3.9mg% .As shown in graph.3. Highest content was found in fresh milk sample. Protein content in cow milk ranged from 2.9to32.3 mg% highest content was found in fresh milk sample that is 3.3 mg%

SNF: The SNF in milk ranged from 8.4to 10.6 gm% and the highest value was observed in boil milk .As shown in graph 4. SNF content in cow milk ranged from 8.1to 9.0 mg% " Simsek.O" (et,,al 2000)

Lactose: The Lactose content in goat milk ranged from 4.5 to 5.6 mg% highest content was found in fresh milk sample as shown in graph 5. Lactose cow content milk ranged from 4.3to 4.9 mg% highest content was found in fresh milk sample

Density: Density in goat milk ranged from 28.38 to 38.57-g/l. The highest values were observed in boil milk .As shown in graph 6. Density content in cow milk ranged from 28.30to 29.95 g/l highest content was found in boil milk sample

Macronutrient content of goat The result of macronutrients content of goat milk is shown in Table 2.



	SODIUM (ppm)	POTASSIUM (ppm)	CALCIUM (ppm)
GOAT			
FreshMilk	547.5	1033.0	1244.2
Boil Milk	570.6	1192.9	1021.2
PreserveMilk	417.9	1182.9	1110.0
Boil & preserved	422.2	942.1	1092.0
COW			
FreshMilk	498.2	1031.2	1242.2
Boil Milk	585.0	1030.2	10.16
PreservMilk	497.5	1194.8	968.2
Boil&Then preserved.	499.1	1080.2	1099.0

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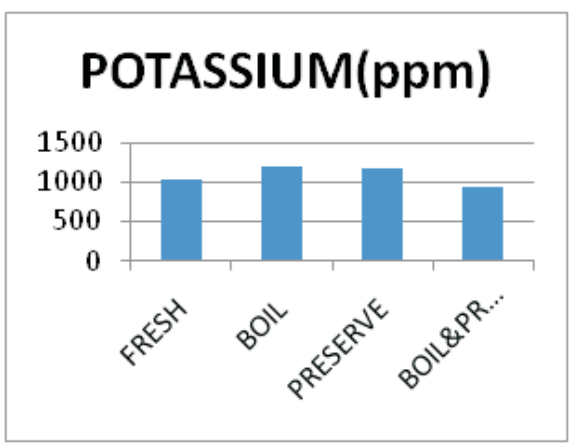
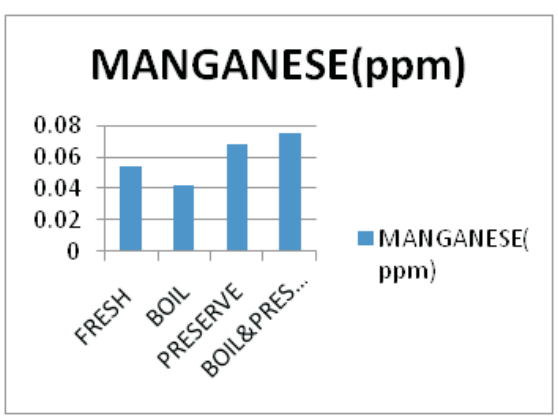
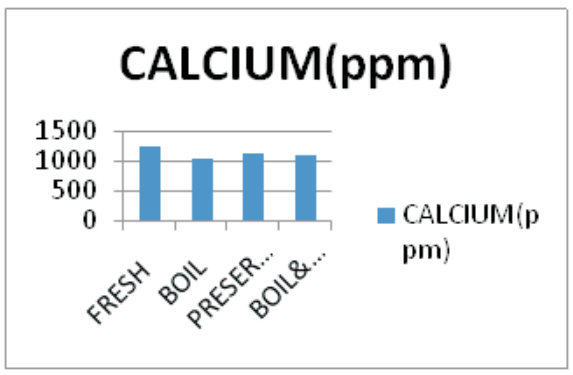
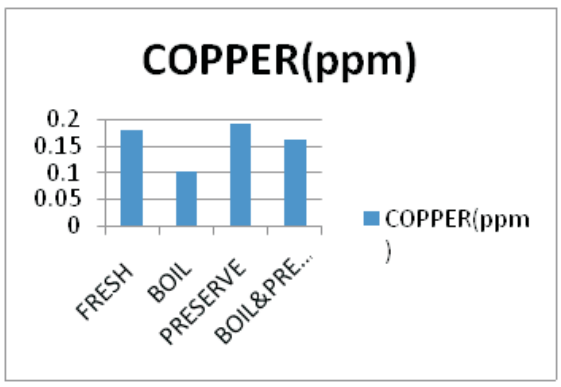




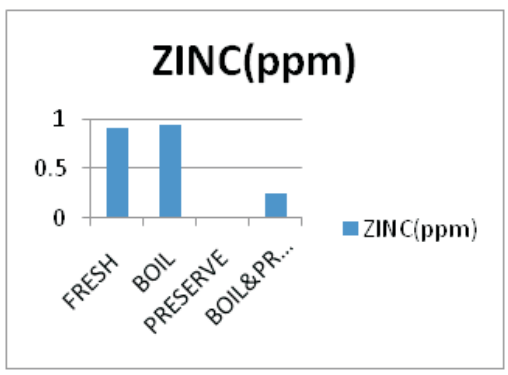




Sodium: Sodium content in goat milk ranged 417.9. to 570.6 ppm, the highest value was reported in boil milk.Asshowningraph7,Sodiumcontent in cow milk ranged from 497.5 to 585.0ppm highest content was found in boil milk sample "Gerber method" (Garaniya et.,al April 2012)

Potassium: Potassium content in goat milk ranged from 942.1 to 1192.9ppm, and highest value was observed in boil milk as shown in graph8. Potassium content in cow milk ranged from 1030.2to 1194.8ppm highest content was found in boil milk sample.

Calcium: The Calcium content in goat milk ranged from 1021.2 to 1244.2 ppm, the highest value was observed in fresh milk. As shown in graph 9. Calcium content in cow milk ranged from 968.2to 1242.2ppm, the highest value was observed in fresh milk



Micronutrients content
The result of micronutrient content asshown in Table 3.

Copper : Copper content in goat milk ranged from 0.10to 0.19 ppm and highest value was reported in preserve milk .as shown in graoh10. Copper content in cow milk ranged from 0.10to 0.18ppm, the highest value was observed in fresh milk

Zinc: Zinc content in goat milk ranged from 0.01to 0.94 ppm and highest value was observed in boil milk graoh12. Zinc content in cow milk ranged from 0.69to 0.0.98ppm, the highest value was observed in preserve milk.

	Copper(ppm)	Zinc (ppm)	Manganese (ppm)	Iron (ppm)
GOAT				
Fresh Milk	0.18	0.90	0.054	1.38
Boil Milk	0.10	0.94	0.042	0.99
Preserve Milk	0.19	0.01	0.068	1.39
Boil & Then preserve milk for 6 days	0.16	0.24	0.075	1.84
COW				
Fresh Milk	0.181	0.699	0.053	1.87
Boil Milk	0.183	0.797	0.059	1.6
Preserve Milk	0.102	0.981	0.034	0.98
Boil & Then preserve milk for 6 days	0.171	0.968	0.068	1.24

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Manganese: Manganese content in goat milk ranged from 0.042to 0.075

ppm and the highest value was observed in boil & preserve milk for 6 days .as show in graph12. Manganese content in cow milk ranged from 0.034to 0.0.68ppm, the highest value was observed in boil 7 preserve milk for 6 days.

Iron: Iron content in goat milk 'ranged from 0.99to 1.84 ppm and the highest value was observed in boil & preserve milk for 6 days as show in graph 13. Iron content in cow milk ranged from 0.98to 1.87 ppm, the highest value was observed in fresh milk.

	UREA	SALT
Fresh Milk	Negative	Negative
Boil Milk	Negative	Negative
Preserve Milk	Negative	Negative
Boil & Then preserve milk for 6 days	Negative	Negative

UREA, SALT & SODA TESTThe milk sample does not contain Urea, Salt, & Soda so the tests are Negative

CONCLUSION

The present investigation on "Biochemical study of Goat Milk at different stages of preservation" has been done at Department of Biotechnology, Rajarshi Shahu College, Latur. All the parameters were done for fresh, boil, preserve & boiled preserved milk of goat. Milking were carried early in the morning between 6.00 to 7.00 am. pH of Goat milk is less than 7 .So pH of goat and cow milk is slightly acidic. The fat content in goat milk ranged from 2.3 to 6.4 mg%. And the fat content in cow milk ranged from 3.0 to 5.4 mg%. As compared to cow milk fat content in goat milk is slightly higher than cow milk.

That results also observed ("Simsek O" et.,al 2000)The protein content in goat milk ranged from 3.2to 3.9mg%. And in cow milk ranged from 2.9to 32.3 mg%. Protein content also slightly greater than cow milk. The SNF in milk ranged from 8.4to 10.6 gm%. & in cow milk ranged from 8.1to 9.0 mg%. SNF content in goat milk is lower than the cow milk. The Lactose content in goat milk ranged from 4.5 to 5.6 mg% & in cow milk ranged from 4.3to 4.9 mg% . Lactose content in goat milk is slightly higher than the cow milk. Density in goat milk ranged from 28.38 to 38.57-g/l. & in cow milk ranged from 28.30to 29.95 g/l. highest density was observed in boil milk of goat. Sodium content in goat milk ranged 417.9. To 570.6 ppm & in cow milk ranged from 497.5 to 585.0ppm. Sodium content in cow & goat milk same. Potassium content in goat milk ranged from 942.1 to 1192.9ppm & in cow milk ranged from 1030.2 to 1194.8ppm. That results also observed ("Barnes R. B " et,,al 1945)

The Calcium content in goat milk ranged from 1021.2 to 1244.2 ppm & in cow milk ranged from 968.2to 1242.2ppm. Copper content in goat milk ranged from 0.10to 0.19 ppm & in cow milk ranged from 0.10to 0.18ppm. Zinc content in goat milk ranged from 0.01to 0.94 ppm & in cow milk ranged from 0.69to 0.0.98ppm, Highest value of copper & zinc observed in fresh milk sample. Manganese content in goat milk ranged from 0.042to 0.075 ppm & in cow milk ranged from 0.034to 0.0.68ppm Iron content in goat milk 'ranged from 0.99to 1.84ppm & in cow milk ranged from 0.98to 1.87ppm. Zinc, Manganese& Iron content in goat milk slightly lower than the cow milk. Urea , soda & salt test negative for goat & cow milk. (" Gervilla R" et.,al)

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