Sr. No. PCSIR - LLC- 219232

GOVERNMENT OF PAKISTAN
Ministry of Science & Technology
Pakistan Council of Scientific & Industrial Research
Laboratories Complex, Lahore
FEROZEPUR ROAD, LAHORE 54600 - PAKISTAN

Doc # LLC/QM/FF/42	Date: Jan 01. 2020	Rev. # 00

TEST REPORT

Results

Results from experimentation regarding treated and untreated bovine milk sample are presented in the following table 1.

Rejection criteria: Organoleptic (No off odor/flavor), Sample pH; 6.6, Positive Alcohol Precipitation Test (APT), Positive Clots on Boiling Test (COB), Total Plate Count (TPC) >3.0 X 10^5cfu/ml

Table 1: Milk Preservation Time in Treated and Untreated Raw Milk Samples

S.No.	Temp (°C)	CAC Reported LP-s Treated Stable Time (h)[1]	Observed Stable Time (h) in *Milkosafe* treated Samples	Remarks
1	5	5-6 days	6 days	pH: 6.8
2	15	24-25	28	pH: 6.7
3	25	11-12	14	pH: 6.7
4	35	7-8	8	pH: 6.6
5	45	-----	5	pH: 6.6, COB: -ve, APT: -ve

Table 2: Results of the *Milkosafe* treated sample kept on 5°C after 6 days

S.No.	Parameter	Result
1	pH	6.8
2	TPC (cfu/ml)	$1.3x10^5$ cfu/ml
3	Thiocyanate	14.11 ppm*
4	Neutralizers	Not Detected
5	Hydrogen Peroxide	Not Detected

*Normal milk concentrations have been reported to range from 2.3 – 35 ppm[4]

Precautions

The product (***Milkosafe***) /LP-s is recommended to be used strictly in accordance with codex guidelines and can be applied to milk of all species.[1]

The product (***Milkosafe***) /LP-s cannot be considered as alternate to pasteurization/ heat treatment of milk.[1]

No significant adverse effects on the chemical, physical or sensory characteristics of raw milk and dairy products have been reported for LP-s so far[3]

It is recommended to treat the milk immediately after milking for getting the desired results.

Conclusion

It is concluded that lactoperoxidase based raw milk preservation system, ***Milkosafe***, has been evaluated and hereby validated regarding above mentioned parameters, and results have been found satisfactory in respect to its efficacy in terms of milk quality and stability when used according to CAC guidelines.

References

1. Codex Alimentarius Commission (1991). Guidelines for Preservation of Raw Milk by by Use of Lactoperoxidase System. CAC, 13-1991)
2. Food Safety and Standards Authority of India. (2016). Manual of Methods of Analysis of Foods; Milk and Milk Products. Ministry of Health and Family Welfare, GoI, New Delhi.
3. Benefits and Potential risks of Lactoperoxidase system of raw milk preservation; Report of an FAO/WHO Technical Meeting, Rome, Italy, 2005.
4. GRAS Notification for Sodium Thiocyanate for Use in Lactoperoxidae System. 2016. Taradon Laboratory,