

Study on the Variation in different Physico-Chemical Constant of Cow and Buffalo Ghee prepared from Desi and Creamery Method

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Abstract

The present study was conducted to determine the physico-chemical constants of ghee as influenced by different methods of manufacture and species. Ten samples in each group were analyzed. It can be concluded that cow ghee has lower percentage of steam volatile water soluble and insoluble fatty acid and low percentage of saturated and high molecular fatty acid as compared to buffalo ghee. The acid value and P. value are not influenced by the species.

Keywords: Cow ghee, buffalo ghee, desi method, creamery method and physico-chemical constant.

Introduction

About 43% of the total milk production is utilized for making ghee. The total annual production is estimated to be 170 thousand metric tons produced in fiscal year 2020. The total ghee market reached a value of Rs 2374 billion in 2020. (<http://www.lmarcgroup.com>). Ghee is a good source of essential fatty acids, vitamins and also supplies a high energy per unit. Ghee is an important article of diet for human consumption in India. The quality of ghee mainly depends upon its method of preparation and quality of the raw material (milk, cream and butter) used. The present study was conducted to determine the variation in the physico-chemical constant of fresh cow and buffalo ghee which was prepared by desi and creamery method.

Aim of the study

To determine the physico-chemical constant of ghee prepared different methods.

Material and Methods

The present work has been divided into two parts-

1. Preparation of ghee
2. Examination of ghee

Preparation of Ghee

In order to study the effect of different method of manufacturing of ghee on the variation between physico-chemical constant, eight litre of milk (cow and buffalo) was taken separately into 2 lot of four litre each. First lot of 4 litre was utilized to prepare ghee by desi method and second lot of remaining 4 litre milk was used for ghee making after separately cream by direct creamery method. Two methods of manufacturing of ghee both desi and creamery applied in this piece of work.

Examination of Ghee

Ten samples of each group of ghee was analyzed for the following different physical and chemical constant by the standard method as described by A.O.A.C. (1970).

Physical Constant

Butyro-refractometer reading (BR)

Chemical Constant

Acid value (AV)

Saponification value (SV)

Iodine Value (IV)

Reichert- meisel value (RM)

Polenske value (PV)

Data were statistical analyzed as described by Snedcor and Cochran (1980).

Results and Discussion

Results obtained during study has been presented in Table No-01-

Preparation of Ghee

It is clearly Indicated that the ghee prepared from desi method has higher B.R. Reading, iodine value and Saponification value as compared to direct cream method. The statistical examination support the influence of method only on acid value which is highly significant, while difference between iodine value and P value is significant only at 5% level of significance. The effect of method of preparation on B.R. Reading is totally in significant. The R.M value and Pvalue are slightly lower as compared to direct cream method. The effect of the method of preparation on Pvalue is only significant at 5% level while R.M. value is practically insignificant.

Effect of Species

The BR Reading , iodine value and acid are higher in cow ghee as compared to buffalo ghee. The statistical examination show that the variation in iodine value is highly significant. Effect on B.R. reading is significant only 5% level of significance, while there is no influence of species on acid value of ghee, RM value, P value and S. Value are lower in cow ghee as compared to buffalo ghee. The influence on R.M. value and S. Value is highly significant while P value shows the insignificant results. Some works also done by Manoj kumar et.al.(2010) and C.P.Serna (2020).

Conclusion

It can be concluded that cow ghee has lower percentage of steam volatile water soluble and insoluble fatty acid and low percentage of saturated and high molecular fatty acid as compared to buffalo ghee. The acid value and P. value are not influenced by the species.

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Properties	Cow ghee		Buffalo ghee	
	Desi method	Creamery method	Desi method	Creamery method
Physical constant				
1.B.R. Reading	42.31	41.00	40.84	40.76
Chemical constant				
1 Iodine value	32.23	29.17	26.70	26.36
2. Acid value	1.36	0.43	0.99	0.22
3. RM Value	25.05	27.14	29.99	30.26
4. P value	1.64	1.88	1.86	2.29
5. S. Value	223.42	221.72	224.89	226.06