

“Role of
MINOR RESEARCH PROJECT SCHEME
IN THE SUBJECT OF
HOME SCIENCE

**Role of Traditional Dairy Products in Socioeconomic
Upliftment of People from Latur District of
Maharashtra State”**

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Chapter 1
Introduction

Marathwada is one of the developing regions of Maharashtra state. It comprised eight administrative districts viz Aurangabad, Beed, Jalna, Osmanabad, Hingoli, Nanded, Parbhani and Latur. Aurangabad is supposed to be regional head quarter. Out of the eight districts Hingoli is backward area, some part of Nanded district occupied by tribal and Beed, Osmanabad, Latur is mainly the area of Balaghat range. Total population is 20 lacs of which 70 per cent people engaged in agricultural; most of them are small and marginal farmers. The area is under deccan plateau and based on dry land (rain fed) agriculture. In these contents. Dairy farming supports socio economic status of dairy farmers and *halwai*. There is a high demand for certain traditional dairy products in the region.

The study is being carried out with respect to know the role of these traditional products in socio-economic development of people of this district. Traditional dairy products i.e. *basundi*, *kallam*, *kunthalgiri pedha*, *dharur pedha*, *khoa*, *dahi* from neighboring villages etc are playing very important role in this district. By understanding the importance of these dairy products Gaikwad and Hembade (2009), Kulkarni and Hembade (2010) conducted study to evaluate the economical analysis of these products.

Ujani basundi is very popular traditional dairy product of Latur district. *Kunthalgiri pedha* only manufactured in Kunthalgiri of district Beed and *Kallam* only manufactured in Parbhani district of Marathwada region. Instead of all above region specific dairy products, some more might be found which may be hidden and not known due to marketing deficits. Therefore, there is need to find out such region specific dairy products and come to know every people of India. The importance of traditional dairy products also underlined by many researchers i.e. Patil, (2000), Rajorhia, (2006) and Rao, et al., (2003) etc.

National status:

There are varieties in traditional milk based sweets, manufactured in the country. The market size is around Rs.12000 crore. However, there are very few

nationally known brands in this category. Many of the organized dairies are involved in the manufacture of varieties of milk based sweets: pedha, paneer, shirkhand, etc.

With the increase in the availability of liquid milk and Western dairy products, refinement in the marketing network and significant improvement in per capita income, there is an increased pressure for the restructuring of the indigenous milk product industry. Now, the organized sector has started showing keen interest in processes and equipment for manufacturing traditional products standardization of products, as well as refinement in packaging and improvement in safety and shelf life. Any innovation which can enable the organized sector to manufacture and market indigenous milk products on an industrial scale can have a far reaching impact on the dairy industry as well as on the economic condition of milk producers.

India as blessed with several competitive advantages, one of which is the highly skilled, unskilled and expensive manpower resource to cater to the ever increasing manpower demands, both at the national and global levels. In the 21st century, an important watershed of our industrial evolution is expected to take place, wherein agroindustry and especially dairying would play a pivotal role with the increasing pull of the market vis-à-vis push of production, significant, opportunities are knocking at our doors, for both domestic and export market.

Significance of the study

The indigenous dairy products are India's largest selling and most profitable segment after liquid milk and account for more than 50 percent of milk utilization. Significant headway has been made in the industrial production of traditional sweets such as shrikhand, gulabjamunm peda and burfi. India's dairy market is multilayered, shaped like a pyramid with the base made up to the vast market for low cost, liquid raw milk. The narrow tip at the top is a small but affluent market, largely for western type and fresh packaged dairy products.

The market for indigenous products far exceeds that for Western dairy products like butter, milk powder and cheese. A great scope exists for further expansion of the market for indigenous milk products, provided quality and safety are ensured and the shelf life is extended to facilitate distribution over larger areas. Major innovations are needed in manufacturing, quality assurance, packaging and process

engineering to adapt these products to current marketing and consumer requirements. Some commercial processes have been developed to manufacture ghee, khoa, shrikhand and gulabjamun, but much is required to be done.

Objectives:

- 1) To study region specific products
- 2) To study economic importance of products
- 3) To study the characterization of these products
- 4) To find out problems of manufactures
- 5) Scope of entrepreneurship
- 6) To study socio-economic developmental aspects of producers, manufacturers and sellers.

Chapter 2

Review of Literature

Gupta and Rao (1972) studied the chemical quality of khurchan and reported that a degree of concentration of poor quality milk to get the necessary physical condition of the product by the halwais. The practice of using milk, with get partially extracted for preparation of this product seems to be widely prevalent.

Rajorhia, et al., (1990) studied the effect of quality of milk on chemical, sensory and rheological properties of khoa and they reported the chemical quality of khoa as moisture (36.08%), fat (24%), ash (3.22%) content in their studied khoa samples.

Prajapati, et al., (1991) studied the chemical quality of gulabjamun. They reported the chemical composition of gulabjamun as 71.83% TS, 10.47% fat, 10.71% protein, 49.87% carbohydrate and 1.32% ash.

Aneja (1992) reported the chemical composition of khoa as moisture (20-25%), fat (25-37%), protein (17-20%), lactose (22-25%), and ash (3.6-3.8%).

Chatterjee, et al., (1994) collected rabri from various shops in Calcutta city, showed wide variations In total solids, fat, protein, lactose, sucrose, ash, minerals and acidity values. Among these, fat and sucrose levels showed higher variations.

Patil, (2000) reported the chemical composition of *basundi* as TS-37.37-56.98 per cent, fat 6-19 percent, protein 4.06-9.47 percent, lactose 3.77-11.43, sucrose 15.25-21.50, ash 0.90-1.76, acidity 0.24-0.52 and Ph 5.88-6.42.

Patel and Upadhyay, (2001) studied the *basundi* sold in three cities of the Guajrat state, viz. Ahmedabad, Vadodara and Anand. They reported that the average chemical composition of *basundi* of these cities was fat 11.52, SNF 18.67, protein 7.7 percent.

Organoleptically the *basundi* had light brown color, a smooth consistency with presence of very minute suspended flakes resembling that plain condensed milk and had pleasant, cooked and nutty flavor.

Patel, et al., (2006) studied the chemical composition of traditional and mechanically prepared *peda*. In this investigation they reported that the *peda* manufactured using traditional method from different traders were superior in chemical and sensory quality than those manufactured using mechanized methods. *Peda* made by traditional method fetched considerably higher score for flavor, total score and body and texture than *peda* made using mechanized method. *Peda* made by traditional method and mechanized had lactose content of 15.7 and 16.6%, respectively. The values for fat, ash and acidity were 18.4 and 15.3%, 2.4 and 2.8% and 0.40 and 0.54% lactic acid.

Khaskheli, et al., (2008) was conducted study to evaluate the chemical and sensory quality of indigenous milk-based product "*Rabri*". Samples were purchased from randomly selected Sweet/Dairy shops (25) situated at different areas at Hyderabad city and Latifabad. The concentration of different components of *Rabri* varied greatly sample to sample. The percentage of moisture content ranged between 24.33 and 38.85%, fat 16.23 and 22.55%, protein 9.94 and 12.01%, lactose/sucrose 27.08 and 43.72% and ash 2.09 and 2.84%.

Gaikwad and Hembade, (2009) studied the cost analysis of traditionally manufactured *Ujani basundi* by collecting data through questionnaire. The interest on fixed cost contributes the maximum as compared to other expenditure. The lowest cost was spent towards license fee and taxes. In variable cost, milk contributes major amount of cost as compared to other costs. In the manufacturing process, the only non-milk product added was the sugar. All the manufacturers use wood as a fuel for preparation of the product, which costed Rs.9.10/kg of product. The total cost of production was about Rs. 79.08 per *kg* and market sale price is Rs. 100 per *kg*.

Raj Ezhil, et al., (2009) while studying economics of butter production and occupational pattern of butter producers in Utupuli Block of Tamilnadu reported that

medium unit constituted higher proportions to the total units followed by larger units and small units.

Gaikwad and Hembade, (2010) studied the manufacturing technique and marketing of *Ujani basundi* manufacturing techniques in this region. Traditionally, in some part of Ausa tehsil the product is prepared by progressive boiling results to more and more skin formation, which is removed and collected on topside of *karahi* and when desired concentration is reached the sugar is added to 10:1. Whereas in Ujani village, the milk is continuously boiled, scrapped till the desired concentration is reached and then sugar is added @ 10:1. The final product has characteristic flavour, body and texture, colour and appearance, which is responsible to its popularity in this area.

Kulkarni and Hembade, (2010) Kulkarni and Hembade (2009) studied occupation pattern of khoa producers in Beed district of Maharashtra state. They reported in their investigation that medium constituted higher proportion to the total units followed by small units and large units.

Gavhane et al., (2014) studied the preparation of peda by using ginger powder and reported that an addition of ginger powder (2, 4 and 6 per cent) significantly decreases in moisture (17.55, 17.29 and 17.00), fat (18.10, 17.76 and 17.39), and protein (14.14, 14.03 and 13.60), while significant increase in total sugar (46.90, 47.40, and 48.28), total solid (81.94, 82.18 and 82.57) and ash (2.80, 3.00 and 3.30) in finished product as compare to control (17.97, 18.40, 14.57, 46.05, 81.62 and 2.60), respectively.

Chapter 3

Materials and Methods

Dairy farming supports socio economic status of dairy farmers and halwai. There is a high demand for certain traditional dairy products in the region. The study was carried out with respect to know the role of the traditional products in socio-economic development of people of Latur district. Traditional dairy products i.e. basundi, kallam, kunthalgiri pedha, dharur pedha, khoa, dahi from neighboring villages etc are playing very important role in this district. For this study 10 tehsils from the Latur district were selected and collected information regarding socio-economic problem of each manufacturer and seller with pretested questionnaire. From each tehsil 10 traditional dairy product manufacturers were randomly selected, in this way data from the 100 traditional dairy product manufacturers were collected. Following questionnaire were used to collect data from traditional dairy product manufacturers.

Questionnaire

- 1) Name of indigenous milk product manufacturer
- 2) Name of owner with address
- 3) Members in the family
- 4) Educational level
- 5) Educational level of family members
- 6) Profession of rest family members
- 7) Experience
- 8) Ownership
- 9) Types of milk product manufactured
 - a) How much product is sold daily?
 - b) Milk quantity
 - c) Product yield
 - d) Cost of production

- e) Sale price
- 10) How much product is sold monthly
- 11) How much product is sold in festival days?
- 12) Economic status of family
 - a) At the beginning of business
- 13) At present
- 14) who prepares the product?
- 15) Labours/staff appointed
 - (Regarding employment given to others)

Collection of Samples

During present investigation for compositional analysis 10 samples of each traditional dairy product were purchased from the study area and transported to the laboratory within 7 hours in an iced stainless steel containers with tightly closed lids. The samples were kept overnight at refrigerated temperature before analysis.

Sensory Evaluation

The samples of traditionally manufactured dairy product samples removed from refrigerator and tempered to room temperature for 45 minutes prior to sensory evaluation. Each judge called separately to judge the coded products. A glass of room temperature water and unsalted crackers were provided for removal of residual flavors from the mouth. The panel of 6 semi-trained judges evaluated the product. The samples were assessed for their sensory attributes i.e. flavor, body and texture, color and appearance using 9 points hedonic scale. (Liked-extremely 9 points, liked very much 8 points, liked moderately 7 points, liked slightly 6 points, neither liked nor disliked 5 points, disliked slightly 4 points, disliked moderately 3 points, disliked very much 2 points and disliked extremely 1 point).

Analysis of Samples

The samples were analyzed for proteins, fats, sucrose, moisture, ash, lactose, titratable acidity, pH and FFA using standard methods.

3.3.1 Determination of Protein

Protein content in collected samples was determined by Kjeldahl method as described in A.O.A.C., (2005) as follows.

It is based on principle when a nitrogenous organic substance like protein is digested with concentrated sulphuric acid the organic nitrogen is converted into inorganic nitrogen as ammonium sulphate. This is distilled with an alkali of a standard acid. The unused acid is titrated against a standard alkali. About 3g of sample weighed accurately, transferred to the Kjeldahl flask, and to it added concentrated sulphuric acid and copper sulphate 25ml and 0.2g respectively . This flask then heated below the boiling point of the acid until frothing ceased. Then added about 10g of potassium sulphate and boiled until acid boil vigorously and became clear and pale green or colorless. The contents of the flask cooled to room temperature. It was then quantitatively transferred to a 1000ml round bottom flask and diluted to 250ml. few pieces of pumice stones were also added to prevent bumping. To make the solution alkaline a 50 ml of sodium hydroxide solution was added. On the other hand 50 ml standard sulphuric acid was taken in conical flask and connected to other end of apparatus in which all ammonia absorbed. Finally apparatus was assembled as given in the BIS manual. When distillate gathered about 150 ml in conical flask, then two or three drops of methyl red indicator added and titrated against standard sodium hydroxide solution.

A blank reading was also carried out using all reagents in the same quantities and with 0.5 g of sucrose in place of the sample.

Calculation

Protein was calculated by using the following formula.

$$\text{Protein, percent by weight} = \frac{8.93 (B-A) N}{W}$$

Where,

W= weight of sample

B= blank reading

N= Normality of NaOH

A= Sample reading

3.3.2 Determination of Fat

Fat was determined by the method given in Indian Standard SP:18, Part XI, (1981). It is described as follows.

Fat content in samples was determined by using Mojonnier fat extraction tube. It is based on the principle of gravitational force. It is necessary to break up the protective film surrounding the fat globule by using suitable agents hence ammonia bring about the break up of the protective layer and addition of alcohol facilitates the passage of fat globules from the aqueous phase to the solvents. The mixed solvent, petroleum and diethyl ether being non miscible with water effects a good extraction of fat from the non-fatty solids in the solution. A well-mixed sample weighed accurately about 5 g and transferred into a small beaker. This sample rubbed to a smooth paste by using equal amount of water. In this beaker, equal amount of water and sodium chloride solution (9 ml) was added. With 10 ml of ethyl alcohol it was transferred to the Mojonnier fat extraction apparatus and mixed well. By adding 25 ml each of diethyl ether and petroleum it was mixed well again and allowed to stand on the flat bottom of the lower bulb until the ethereal layer was clear and completely separated from the aqueous layer, for not less than 30 minutes. The supernatant layer was collected in previously weighed flask containing glass beads. In this way process of extraction and decantation of supernatant liquid was repeated two to three times with 15 ml of each diethyl ether and petroleum ether every time. Simultaneously when the above procedure was carried out, blank determination made with 5 ml of water in place of the sample. The difference in weight before and after the petroleum extraction, after correcting for the blank, was the weight of the fat contained in the weight of the sample taken.

$$\text{Calculation- Fat percent} = \frac{\text{Weight of fat} \times 100}{\text{Weight of sample}}$$

3.3.3 Determination of Sucrose

Sucrose was determined by the method given in Indian Standard SP:18, Part XI, (1981) described as follows.

Sucrose was determined by using the volumetric method described by Lane-Eynon. It is based on the principle that when sucrose solution reduces quantitatively alkaline cupric salt solution on boiling to red cuprous oxide from the amount of copper salt reduced the quantity of sucrose is calculated. The sample mixed well, weighed accurately about 40 g and transferred to a 100 ml of beaker. With 50 ml of hot water at 80-90°C it was then mixed vigorously and transferred to 250 ml of volumetric flask. The distilled water used (60°C) for successive washing and made the volume of liquid to 150ml. The liquid was allowed to cool to room temperature and then added 5 ml of dilute ammonia solution, mixed well and allowed to stand for 15 minutes. The added ammonia neutralized with the exact equivalent of dilute acetic acid. Zinc acetate solution and potassium ferrocyanide solution each of 12.5 ml were added to this solution. This solution made up to 250 ml using distilled water in 250 volumetric flask, allowed to settled and filtered using the Wattman filter paper no. 1. This filtrate was given name as B₁. Pipetted 50 ml of solution B₁ into a 100 ml volumetric flask, added to it 5 ml of concentrated hydrochloric acid and heated at 68 °C for 5 minutes. Cooled the solution and neutralized by sodium hydroxide solution. It was called as A₁ solution. Solution B₁ and A₁ diluted so that the volume of solution required for 10 ml Fehling's solution was between 15 and 50 ml and called B₂ and A₂ respectively. These diluted solution taken into 50 ml of burette. The mixture Fehling's solution A and B made just before the titration by taking equal volume of both, and 10 ml of this mixture was used with one two drops of methylene blue as indicator and titrated against the solution prepared i.e. A₁, B₁, A₂ and B₂. The titration was completed when the color of indicator disappeared and formed brick red.

Calculation

Calculation was carried out by using the following formula.

$$\text{Sucrose, percent by weight} = \frac{20W_1}{W_2} \left[\frac{2f_2 - f_1}{V_2 - V_1} \right]$$

Where,

W = weight in mg of sucrose corresponding to 10ml of Fehling's Solution

W= weight in g of the material taken for the determination
f₂= dilution factor for solution A₂ from A₁
V₂= volume in ml of solution A₁ corresponding to 10ml of Fehling's solution,
f₁= dilution factor for solution B₂ from B₁
V₂= volume in ml of solution B₁ corresponding to 10ml of Fehling's solution,

3.3.4 Determination of Moisture

Moisture was determined by the method given in Indian Standard SP:18, Part XI, (1981) described as follows.

The sample weighed accurately about 3g and transferred to a dish previously dried and weighed. It was heated containing the material after uncovering in electric oven maintained at 102+- 1°C. The dish after heating kept in desiccators for cooling at room temperature. Repeated the process of drying, cooling and weighing at 30 minute interval until the difference between the two consecutive weighing got less than 1 mg, and recorded the lowest weight.

Calculation –

Calculation was carried out by using the following formula.

$$\text{Moisture percent by weight} = \frac{100(W_1 - W_2)}{W_1 - W}$$

Where,

W₁= weight in g of dish with the material before drying,

W₂= weight in g of the dish with the material after drying, and

W = weight in g of the empty dish.

3.3.5 Determination of Ash

Ash was determined by the method given in Indian Standard SP:18, Part XI, (1981) as follows.

Product contains soluble substances containing salts like the phosphates, citrates, sulphates, chlorides and bicarbonates of calcium, magnesium, potassium, sodium etc. heating of milk at higher temperature decomposes organic matter and soluble

inorganic salts are left behind in the form of ash. The sample weighed accurately about 3g and transferred to a crucible and heated on the flame till the maximum moisture evaporates. This crucible then kept in muffle furnace at 550°C till gray ash resulted. The process of heating cooling and weighing repeated until the difference between two consecutive weighing got less than 1 mg. The lowest weight finally noted.

Calculation

Calculation was carried out by using the following formula.

$$\text{Moisture percent by weight} = \frac{100(W_1 - W_2)}{W_1 - W_2}$$

Where,

W_1 = weight in g of crucible with ash,

W_2 = weight in g of the crucible, and

W = weight in g of the crucible with the dried sample taken for the test

3.3.6 Determination of Acidity

The acidity of prepared samples was determined by procedure described in IS (SP: 18 Part XI, 1980). The procedure is described as follows.

Accurately weighed 2 gm of sample in a porcelain dish. In this sample, 3 ml of hot water added and rendered into a fine past in a pastel and mortar. It was then further diluted with 17ml of hot water and washed off any adherents from the pastel. To this added one ml of phenolphthalein indicator solution and titrated against 0.1N NaOH solution. The end point of this titration was slight pinkish tinge.

3.3.7 Determination of FFA

The FFA was determined as described by Aggrawal and Sharma, (1961) with modifications that 10 g of sample was taken and dissolved in 25 ml of chloroform to this added 50 ml of neutralized alcohol and titrated against N/10 NaOH using phenolphthalein indicator.

Formula-

$$\text{Acid (\% oleic acid)} = \frac{\text{ml of alkali} \times N \times 56}{\text{Wt of sample taken (g)}}$$

3.3.8 Determination of Lactose

Lactose was determined the procedure recommended by Gojiya and Lata, (2003) as follows

The sample was heated and cooled to room temperature and from this took 25gm in 250 ml volumetric flask. It was then diluted to 200 ml with distilled water and to this acetic (10%) acid was added drop wise to make it clear precipitation. After precipitation volume made to 250 ml and filtered with whatmann No.1. The filtrate collected and filled burette with this filtrate. Fehling's solution prepared by mixing equal amount of Fehling's solution A and B. Fehling's solution (10ml) taken in conical flask, to this added 3 drops of phenolphthalein indicator and titrated against the filtrate containing lactose until blue color changes to red. The end point was blue to brick red precipitate. The titration was repeated to get value within 0.1 ml.

Lactose (% by weight)= 67.8/B.R.

3.10 Statistical Analysis

The statistical analysis of the mean values was carried out as per Snedecor and Cochran, (1994).

Chapter 4

Results and Descussion

4.1 Socio-economical status, chemical analysis of milk products collected from Latur tehsil

Table, 4.1 Production Statistics of milk products in Latur tehsil

| Shop | Production (Kg/Day) | | | | | |
|--------------|---------------------|------|-------|------------|---------|----------|
| | Khoa | Peda | Burfi | Gulabjamun | Basundi | Kalakand |
| 1 | 10 | 12 | 2 | 1 | 8 | 2 |
| 2 | 13 | 13 | 3 | 3 | 10 | 4 |
| 3 | 14 | 6 | 6 | 2 | 11 | 2 |
| 4 | 11 | 8 | 4 | 2 | 12 | 2 |
| 5 | 16 | 9 | 3 | 4 | 6 | 6 |
| 6 | 20 | 10 | 2 | 3 | 5 | 3 |
| 7 | 18 | 12 | 4 | 2 | 8 | 3 |
| 8 | 10 | 6 | 8 | 1 | 6 | 1 |
| 9 | 8 | 4 | 6 | 3 | 9 | 2 |
| 10 | 9 | 5 | 2 | 2 | 8 | 1 |
| Total | 129 | 85 | 40 | 23 | 83 | 26 |

4.1.1 Production Statistics of Khoa of Latur tehsil

For the present investigation 10 production units were randomly selected from Latur tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product

by various producers. Some of them are selling the product 8 kg per day whereas some of them are selling 20 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various occasion always happen such as passing exam, child birth, new house, new job, marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.2 Physicochemical properties of milk products marketed in Latur tehsil

| Sr. no. | Constituents | Mean | Peda | Burfi | Gulab jamun | Basundi | Kala kand |
|---------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1 | Moisture | 25.06 ±1.41 | 18.71 ±0.17 | 17.13 ±0.13 | 30.46 ±0.71 | 51.23 ±1.46 | 26.21 ±0.09 |
| 2 | Fat | 25.7 ±1.07 | 17.90 ±0.12 | 20.41 ±0.08 | 9.25 ±0.45 | 12.5 ±0.73 | 21.34 ±0.10 |
| 3 | Protein | 19.27 ±0.09 | 14.62 ±0.11 | 14.76 ±0.10 | 8.26 ±0.07 | 10.43 ±0.41 | 18.53 ±0.08 |
| 4. | Lactose | 26.27 ±0.39 | 46.38 ±0.09 | 44.63 ±0.11 | 50.41 ±0.34 | 24.1 ±0.94 | 29.56 ±0.04 |
| 5. | Ash | 3.7 ±0.08 | 2.40 ±0.012 | 3.05 ±0.05 | 1.60 ±0.02 | 1.73 ±0.04 | 2.70 ±0.03 |

4.1.2 Physicochemical properties of khoa marketed in Latur tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 25.06%. However, Rudreshappa and De, (1971) reported 20-25%, Patel, et al., (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 25.7%. The values of fat content were lower than those of Patel, et al.,

(1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for lactose content. The lactose content observed 26.27% whereas Patel et al., (1985) reported 18.85% of lactose. *Khoa* analyzed for protein content. The protein content observed 19.27.05% whereas Patel et al., (1985) reported 16.30% of protein. The percentage of ash in *khoa* samples observed 2.32%. Patel, et al., (1985) also reported ash 3.7% in *khoa*. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of *khoa jalebi* a unique product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various halwais. Acharya, *et al.* (2015). They studied the Gundpak, is a popular *khoa* based traditional milk product of Nepal. Twelve market samples of *gundpak* were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

Table, 4.3 Educational changes of sweetmeat sellers of Latur tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|-------|-----------------------------|-------------------------------|---------------------------------|
| 1 | Nil | Graduate | Graduate |
| 2 | Nil | Graduate | Graduate |
| 3 | Nil | 12 th | Teacher |
| 4 | Nil | 12 th | Teacher |
| 5 | Nil | Graduate | Graduate |
| 6 | Nil | Graduate | Graduate |
| 7 | Nil | 10 th | Graduate |
| 8 | 5 th | 12 th | Graduate |
| 9 | Nil | 10 th | Graduate |
| 10 | Nil | 4 th | Graduate |

4.1.3 Educational changes of sweetmeat sellers of Latur tehsil

Table, 4.13 shows the educational changes of sweetmeat sellers of Latur district. From the table it is observed that the 90% of members were illiterate when they had started their business. And only 10% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

Table, 4.4. Socioeconomic profile of the respondents in Latur tehsil (N=25)

| Sr. No. | Factors | Number of respondents | | |
|---------|-----------------------------|-----------------------|------------|--|
| | | Number | Percentage | |
| 1. | Age (in years) | | | |
| | Below 25 | 2 | 8 | |
| | 26-35 | 4 | 16 | |
| | 36-45 | 8 | 32 | |
| | Above 46 | 11 | 44 | |
| 2. | Monthly income level | | | |
| | Below 5000 | 16 | 64 | |
| | 5001-10000 | 6 | 24 | |
| | 10001-15000 | 2 | 8 | |
| | Above 15000 | 1 | 4 | |

4.1.4 Socioeconomic profile of the respondents in Latur tehsil

Education is one of the most important determinants of a person's social status. The table, 4.14 shows that very few respondents observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 6-35 only 4 were observed and between 36-45 eight respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income

generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. Monthly income is totally depends on how many milch animals is to be reared. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. After this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

4.2 Socio-economical status, chemical analysis of milk products collected from Udgir tehsil

Table, 4.5 Production Statistics of milk products in Udgir tehsil

| Shop | Production (Kg.) | | | | | |
|--------------|------------------|------|-------|-------------|---------|-----------|
| | Khoa | Peda | Burfi | Gulab jamun | Basundi | Kala kand |
| 1 | 4 | 9 | 1 | 2 | 2 | 1 |
| 2 | 6 | 8 | 1 | 1 | 2 | 2 |
| 3 | 8 | 7 | 2 | 3 | 3 | 1 |
| 4 | 8 | 4 | 3 | 1 | 2 | 1 |
| 5 | 15 | 5 | 2 | 3 | 1 | 2 |
| 6 | 16 | 4 | 1 | 3 | 1 | 1 |
| 7 | 18 | 8 | 1 | 2 | 3 | 1 |
| 8 | 11 | 9 | 4 | 2 | 1 | 1 |
| 9 | 9 | 6 | 2 | 5 | 1 | 1 |
| 10 | 9 | 4 | 1 | 1 | 3 | 1 |
| Total | 104 | 64 | 18 | 23 | 19 | 12 |

4.2.1 Production Statistics of Khoa of Udgir tehsil

For the present investigation 10 production units were randomly selected from Udgir tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 4 kg per day whereas some of them are selling 18 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various occasion always happen such as passing exam, child birth, new house, new job, marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.6 Physicochemical properties of khoa marketed in Udgir tehsil

| Sr. no. | Constituents | Khoa | Peda | Burfi | Gulab jamun | Basundi | Kala kand |
|---------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1 | Moisture | 25.10 ±1.39 | 18.37 ±0.62 | 17.01 ±0.20 | 30.80 ±0.29 | 51.74 ±0.77 | 25.88 ±0.40 |
| 2 | Fat | 25.63 ±1.08 | 18.18 ±0.40 | 20.15 ±0.44 | 9.31 ±0.46 | 11.91 ±0.41 | 21.47 ±0.11 |
| 3 | Protein | 19.87 ±0.94 | 14.79 ±0.34 | 14.76 ±0.11 | 8.59 ±0.39 | 10.48 ±0.42 | 18.67 ±0.13 |
| 4. | Lactose | 25.80 ±0.94 | 46.28 ±0.06 | 45.03 ±0.57 | 49.74 ±0.34 | 24.12 ±0.97 | 30.25 ±0.93 |
| 5. | Ash | 3.70 ±0.05 | 2.40 ±0.12 | 3.05 ±0.05 | 1.54 ±0.09 | 1.73 ±0.04 | 2.71 ±0.03 |

4.2.2 Physicochemical properties of khoa marketed in Udgir tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 25.10. However, Rudreshappa and De, (1971) reported 20-25%, Patel, et al., (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 25.63%. The values of fat content were lower than those of Patel, et al., (1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for lactose content. The lactose content observed 25.80% whereas Patel et al., (1985) reported 18.85% of protein. *Khoa* analyzed for protein content. The protein content observed 19.87% whereas Patel et al., (1985) reported 16.30% of protein. The percentage of ash in *khoa* samples observed 3.70%. Patel, et al., (1985) also reported ash 2.92% in *khoa*. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of *khoa jalebi* a unique product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various *halwais*. Acharya, *et al.* (2015). They studied the *Gundpak*, is a popular *khoa* based traditional milk product of Nepal. Twelve market samples of *gundpak* were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

Table, 4.7 Educational changes of sweetmeat sellers of Udgir tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|-------|-----------------------------|-------------------------------|---------------------------------|
| 1 | Nil | 10 th | Graduate |
| 2 | Nil | 8 th | Graduate |
| 3 | Nil | 12 th | Teacher |
| 4 | 4 th | 12 th | Agriculture diploma |
| 5 | 10 th | Graduate | Graduate |
| 6 | Nil | Graduate | Graduate |

| | | | |
|----|-----|------------------|------------------|
| 7 | Nil | 10 th | 12 th |
| 8 | Nil | 12 th | Graduate |
| 9 | Nil | 10 th | 12 th |
| 10 | Nil | 4 th | 12 th |

4.2.3 Educational changes of sweetmeat sellers of Udgir tehsil

Table, 4.27 shows the educational changes of sweetmeat sellers of Udgir district. From the table it is observed that the 70% of members were illiterate when they had started their business. And only 30% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

Table, 4.8. Socioeconomic profile of the respondents in Udgir tehsil (N=10)

| Sr. No. | Factors | Number of respondents | |
|---------|-----------------------------|-----------------------|------------|
| | | Number | Percentage |
| 1. | Age (in years) | | |
| | Below 25 | 3 | 12 |
| | 26-35 | 3 | 12 |
| | 36-45 | 7 | 28 |
| | Above 46 | 12 | 48 |
| 2. | Monthly income level | | |
| | Below 5000 | 18 | 72 |
| | 5001-10000 | 5 | 20 |
| | 10001-15000 | 1 | 4 |
| | Above 15000 | 1 | 4 |

4.2.4 Socioeconomic profile of the respondents in Udgir tehsil

Education is one of the most important determinants of a person's social status. The table, 4.28 shows that very few respondents observed below the age of 25. The highest number of respondents observed in above age level 46. However between

age 26-35 only 3 were observed and between 36-45 seven respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. Monthly income is totally depends on how many milch animals is to be reared. The table shows that the maximum (18) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 5 respondents were observed however between the income range 10001-15000 and above only 1 respondent were observed respectively.

4.3 Socio-economical status, chemical analysis of milk products collected from Ahmedpur tehsil

Table, 4.9 Production Statistics of milk products of Ahmedpur tehsil

| Shop | Production (Kg.) | | | | | |
|--------------|------------------|------|-------|-------------|---------|-----------|
| | Khoa | Peda | Burfi | Gulab jamun | Basundi | Kala kand |
| 1 | 7 | 9 | 3 | 1 | 3 | 2 |
| 2 | 8 | 8 | 4 | 2 | 3 | 1 |
| 3 | 6 | 7 | 2 | 3 | 2 | 2 |
| 4 | 9 | 4 | 1 | 1 | 4 | 2 |
| 5 | 10 | 5 | 2 | 1 | 3 | 4 |
| 6 | 11 | 4 | 1 | 4 | 2 | 3 |
| 7 | 7 | 8 | 1 | 2 | 4 | 0 |
| 8 | 6 | 9 | 2 | 2 | 3 | 1 |
| 9 | 8 | 6 | 2 | 1 | 2 | 1 |
| 10 | 8 | 4 | 4 | 1 | 1 | 1 |
| Total | 80 | 64 | 22 | 18 | 27 | 17 |

4.3.1 Production Statistics of Khoa of Ahmedpur tehsil

For the present investigation 10 production units were randomly selected from Ahmedpur tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 6 kg per day whereas some of them are selling 11 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various occasion always happen such as passing exam, child birth, new house, new job, marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.10 Physicochemical properties of milk products marketed in Ahmedpur tehsil

| Sr. no. | Constituents | Khoa | Peda | Burfi | Gulabjamun | Basundi | Kalakand |
|---------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1 | Moisture | 24.69 ±1.05 | 18.65 ±0.24 | 17.23 ±0.21 | 30.21 ±0.52 | 51.31 ±1.50 | 26.58 ±0.59 |
| 2 | Fat | 26.03 ±0.75 | 17.87 ±0.13 | 20.45 ±0.04 | 9.48 ±0.25 | 12.68 ±0.77 | 21.07 ±0.47 |
| 3 | Protein | 19.14 ±0.24 | 14.29 ±0.36 | 14.46 ±0.42 | 8.39 ±0.21 | 10.06 ±0.31 | 19.10 ±0.73 |
| 4. | Lactose | 26.44 ±0.38 | 46.71 ±0.56 | 44.8 ±0.25 | 50.28 ±0.39 | 24.44 ±0.54 | 29.76 ±0.24 |
| 5. | Ash | 3.70 ±0.07 | 2.44 ±0.09 | 3.05 ±0.05 | 1.64 ±0.02 | 1.69 ±0.004 | 2.74 ±0.02 |

4.3.2 Physicochemical properties of khoa marketed in Ahmedpur tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 24.69%. However, Rudreshappa and De, (1971) reported 20-25%, Patel, et al., (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 26.03%. The values of fat content were higher than those of Patel, et al., (1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for lactose content. The lactose content observed 26.44% whereas Patel et al., (1985) reported 18.85% of protein. *Khoa* analyzed for protein content. The protein content observed 19.14% whereas Patel et al., (1985) reported 16.30% of protein. The percentage of ash in *khoa* samples observed 3.70%. Patel, et al., (1985) also reported ash 2.92% in *khoa*. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of *khoa jalebi* a unique product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various *halwais*. Acharya, *et al.* (2015). They studied the *Gundpak*, is a popular *khoa* based traditional milk product of Nepal. Twelve market samples of *gundpak* were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

The percentage of ash in *burfi* samples observed 3.05%. Kamble, *et al.*, (2010) also reported chemical composition of *burfi* as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of *burfi* as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%. The percentage of ash in *gulabjamun* samples observed 1.64%. Kamble, *et al.*, (2010) also reported chemical composition of *burfi* as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Yewale and Rao

(2012) studied the standardization of reported the average gross chemical composition of the Khoa powder gulabjamun mix as moisture 9.43, fat 18.94, protein 14.03, ash 3.97 and total carbohydrates (by difference) 53.63%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

The moisture content of *basundi* is presented above table. The results showed that the moisture content in *basundi* observed 51.31%. This variation could be attributed to uncontrolled heating and concentration of milk. However, values of such product were higher than those of De, (1980) and Patel and Upadhyay, (2004a). The fat content of *basundi* was observed 12.68%. The values of fat content were higher than those of Patel and Upadhyay, (2004a) and Dharaiya, *et al.*, (2010). The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 24.44%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Basundi* analyzed for protein content. The protein content observed 10.06%. The percentage of ash in *basundi* samples observed 1.69%. Patel and Upadhyay, (2001) also reported variations in chemical quality of *basundi* sold in Gujarat state. Gaikwad and Hembade (2012) also reported the moisture percentage 27.71±2.18% protein content 12.99%, fat ranged between 14.83-22.14% whereas the average fat, 17.12±3.39%, sucrose 33.23±5.45%, ash 1.95±0.12%.

Table, 4.11 Educational changes of sweetmeat sellers of Ahmedpur tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|-------|-----------------------------|-------------------------------|---------------------------------|
| 1 | 4 th | 12 th | Graduate |
| 2 | Nil | 10 th | Graduate |
| 3 | Nil | 8 th | Teacher |
| 4 | Nil | Graduate | Diploma |
| 5 | 8 th | Graduate | Graduate |
| 6 | Nil | Graduate | Graduate |
| 7 | Nil | Graduate | Agriculture Degree |

| | | | |
|----|-----------------|------------------|------------------|
| 8 | Nil | 12 th | Graduate |
| 9 | 7 th | 10 th | Graduate |
| 10 | Nil | 4 th | 10 th |

4.3.2 Educational changes of sweetmeat sellers of Ahmedpur tehsil

Table, 4.41 shows the educational changes of sweetmeat sellers of Ahmedpur district. From the table it is observed that the 70% of members were illiterate when they had started their business. And only 30% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher and agriculture degree holders.

Table, 4.12. Socioeconomic profile of the respondents in Ahmedpur tehsil (N=10)

| Sr. No. | Factors | Number of respondents | |
|---------|-----------------------------|-----------------------|------------|
| | | Number | Percentage |
| 1. | Age (in years) | | |
| | Below 25 | 0 | 0 |
| | 26-35 | 1 | 10 |
| | 36-45 | 2 | 20 |
| | Above 46 | 7 | 70 |
| 2. | Monthly income level | | |
| | Below 5000 | 3 | 30 |
| | 5001-10000 | 6 | 60 |
| | 10001-15000 | 1 | 10 |
| | Above 15000 | 0 | 0 |

4.3.3 Socioeconomic profile of the respondents in Ahmedpur tehsil

The table, 4.42 shows that no any single respondents observed below the age of 25. Education is one of the most important determinants of a person's social status. The highest number of respondents observed in above age level 46. However between age 26-35 only 1 was observed and between 36-45 2 respondents were observed.

Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

4.4 Socio-economical status, chemical analysis of milk products collected from Nilanga tehsil

Table, 4.13 Production Statistics of milk products in Nilanga tehsil

| Shop | Production (Kg.) | | | | | |
|--------------|------------------|------|-------|------------|---------|----------|
| | Khoa | Peda | Burfi | Gulabjamun | Basundi | Kalakand |
| 1 | 8 | 6 | 2 | 1 | 3 | 1 |
| 2 | 6 | 5 | 3 | 1 | 3 | 1 |
| 3 | 12 | 4 | 2 | 1 | 3 | 1 |
| 4 | 11 | 2 | 2 | 2 | 2 | 2 |
| 5 | 14 | 2 | 3 | 1 | 4 | 0 |
| 6 | 10 | 1 | 1 | 1 | 3 | 2 |
| 7 | 6 | 3 | 4 | 1 | 6 | 0 |
| 8 | 6 | 5 | 6 | 1 | 6 | 1 |
| 9 | 4 | 2 | 4 | 1 | 2 | 0 |
| 10 | 2 | 1 | 1 | 1 | 1 | 0 |
| Total | 79 | 31 | 28 | 11 | 33 | 8 |

4.4.1 Production Statistics of Khoa of Nilanga tehsil

For the present investigation 10 production units were randomly selected from Nilanga tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product

by various producers. Some of them are selling the product 2 kg per day whereas some of them are selling 14 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various occasion always happen such as passing exam, child birth, new house, new job, marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.14 Physicochemical properties of khoa marketed in Nilanga tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|------|
| 1 | Moisture | 24.68 | 1.05 |
| 2 | Fat | 26.06 | 0.73 |
| 3 | Protein | 19.10 | 0.28 |
| 4. | Lactose | 26.6 | 0.50 |
| 5. | Ash | 3.65 | 0.14 |

4.4.2 Physicochemical properties of khoa marketed in Nilanga tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 24.68%. However, Rudreshappa and De, (1971) reported 20-25%, Patel, et al., (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 26.06%. The values of fat content were higher than those of Patel, et al., (1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for lactose content. The lactose content observed 26.60% whereas Patel et al., (1985) reported 18.85% of protein. *Khoa* analyzed for protein content. The protein content observed 19.10% whereas Patel et al., (1985) reported 16.30% of

protein. The percentage of ash in *khoa* samples observed 3.65%. Patel, et al., (1985) also reported ash 2.92% in *khoa*. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of *khoa jalebi* a unique product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various halwais. Acharya, et al. (2015). They studied the *Gundpak*, is a popular *khoa* based traditional milk product of Nepal. Twelve market samples of *gundpak* were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

Table, 4.15 Physicochemical properties of *peda* marketed in Nilanga tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 19.08 | 0.41 |
| 2 | Fat | 17.77 | 0.23 |
| 3 | Protein | 14.92 | 0.53 |
| 4. | Total Sucrose | 45.78 | 0.75 |
| 5. | Ash | 2.50 | 0.02 |

4.4.8 Physicochemical properties of *peda* marketed in Nilanga tehsil

The moisture content of *peda* is presented above table. The results showed that the moisture content in *peda* ranged observed 19.08%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *peda* was 17.77%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 45.78%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Peda* also analyzed for protein content. The protein content observed 14.92%. The percentage of ash in *peda* samples observed 2.50%. Jha et al., (2014) reported the proximate composition of *lal peda* 12.4% moisture,

16.7% lactose, 17.2% protein, 18.5% fat, 3% ash and 32.2% sucrose. Londhe and Pal (2008) reported moisture content in *peda* ranged from 12.01 (Dharwad *peda*) to 13.04% (Mathura *peda*), which is in close range with the current findings. Modha, *et al.*, standardized thabdi *peda* and they found thabdi *peda* to contain on an average 16.80 % fat, 17.48 % moisture, 11.25 % protein, 20.95 % lactose, 29.99 % sucrose, and 3.53 % ash.

Table, 4.16 Physicochemical properties of burfi marketed in Nilanga tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 17.44 | 0.36 |
| 2 | Fat | 20.75 | 0.54 |
| 3 | Protein | 14.69 | 0.27 |
| 4. | Total Sucrose | 44.21 | 0.35 |
| 5. | Ash | 2.95 | 0.13 |

4.4.9 Physicochemical properties of burfi marketed in Nilanga tehsil

The moisture content of burfi is presented above table. The results showed that the moisture content in burfi ranged observed 17.44%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of burfi was 20.75%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 44.21%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. burfi *also* analyzed for protein content. The protein content observed 14.69%. The percentage of ash in burfi samples observed 2.95%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.17 Physicochemical properties of Gulabjamun marketed in Nilanga tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|------|
| 1 | Moisture | 30.76 | 0.33 |

| | | | |
|----|---------------|-------|------|
| 2 | Fat | 9.25 | 0.45 |
| 3 | Protein | 8.33 | 0.03 |
| 4. | Total Sucrose | 50.11 | 0.48 |
| 5. | Ash | 1.54 | 0.09 |

4.4.10 Physicochemical properties of gulabjamun marketed in Nilanga tehsil

The moisture content of *gulabjamun* is presented above table. The results showed that the moisture content in *gulabjamun* observed 30.76%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *gulabjamun* was 9.25%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 50.11%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *gulabjamun* also analyzed for protein content. The protein content observed 8.33%. The percentage of ash in *gulabjamun* samples observed 1.54%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Yewale and Rao (2012) studied the standardization of reported the average gross chemical composition of the Khoa powder gulabjamun mix as moisture 9.43, fat 18.94, protein 14.03, ash 3.97 and total carbohydrates (by difference) 53.63%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.18 Physicochemical properties of Basundi marketed in Nilanga tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|-------|
| 1 | Moisture | 51.56 | 1.007 |
| 2 | Fat | 12.21 | 0.43 |
| 3 | Protein | 9.88 | 0.02 |
| 4. | Total Sucrose | 24.54 | 0.70 |
| 5. | Ash | 1.72 | 0.05 |

4.4.11 Physicochemical properties of Basundi marketed in Nilanga tehsil

The moisture content of *basundi* is presented above table. The results showed that the moisture content in *basundi* observed 51.56%. This variation could be attributed to uncontrolled heating and concentration of milk. However, values of such product were lower than those of De, (1980) and Patel and Upadhyay, (2004a). The fat content of *basundi* was observed 12.21%. The values of fat content were higher than those of Patel and Upadhyay, (2004a) and Dharaiya, *et al.*, (2010). The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 24.54%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Basundi* analyzed for protein content. The protein content observed 9.88%. The percentage of ash in *basundi* samples observed 1.72%. Patel and Upadhyay, (2001) also reported variations in chemical quality of *basundi* sold in Gujarat state. Gaikwad and Hembade (2012) also reported the moisture percentage $27.71 \pm 2.18\%$ protein content 12.99%, fat ranged between 14.83-22.14% whereas the average fat, $17.12 \pm 3.39\%$, sucrose $33.23 \pm 5.45\%$, ash $1.95 \pm 0.12\%$.

Table, 4.19 Physicochemical properties of Kalakand marketed in Nilanga tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 26.68 | 0.73 |
| 2 | Fat | 21.07 | 0.47 |
| 3 | Protein | 18.61 | 0.06 |
| 4. | Total Sucrose | 29.93 | 0.48 |
| 5. | Ash | 2.70 | 0.03 |

4.4.12 Physicochemical properties of kalakand marketed in Nilanga tehsil

The moisture content of *kalakand* is presented above table. The results showed that the moisture content in *kalakand* observed 26.68%. This variation could

be attributed to uncontrolled heating and concentration of milk. The fat content of *kalakand* was 21.07%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 29.93%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *kalakand* also analyzed for protein content. The protein content observed 18.61%. The percentage of ash in *kalakand* samples observed 2.70%. Singh and Gopal (2006) reported fat (16.04%), protein (14.19%), sucrose (35.46%) and ash (1.53%) in *kalakand*. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.20 Educational changes of sweetmeat sellers of Nilanga tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|-------|-----------------------------|-------------------------------|---------------------------------|
| 1 | Nil | 8 th | Graduate |
| 2 | Nil | 4 th | Graduate |
| 3 | Nil | Graduate | Teacher |
| 4 | Nil | 5 th | Graduate |
| 5 | Nil | 12 th | Graduate |
| 6 | Nil | 10 th | Teacher |
| 7 | Nil | 10 th | Graduate |
| 8 | Nil | 12 th | Graduate |
| 9 | Nil | 5 th | Teacher |
| 10 | 4 th | 5 th | 12 th |

4.4.13 Educational changes of sweetmeat sellers of Nilanga tehsil

Table, 4.55 shows the educational changes of sweetmeat sellers of Nilanga district. From the table it is observed that the 90% of members were illiterate when they had started their business. And only 10% of members were literate. But due to

poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, and agriculture degree holders.

Table, 4.21. Socioeconomic profile of the respondents in Nilanga tehsil (N=10)

| Sr. No. | Factors | Number of respondents | |
|---------|-----------------------------|-----------------------|------------|
| | | Number | Percentage |
| 1. | Age (in years) | | |
| | Below 25 | 0 | 0 |
| | 26-35 | 1 | 10 |
| | 36-45 | 4 | 40 |
| | Above 46 | 5 | 50 |
| 2. | Monthly income level | | |
| | Below 5000 | 3 | 30 |
| | 5001-10000 | 5 | 50 |
| | 10001-15000 | 1 | 10 |
| | Above 15000 | 1 | 10 |

4.4.14 Socioeconomic profile of the respondents in Nilanga tehsil

Education is one of the most important determinants of a person's social status. The table, 4.56 nobody observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 26-35 only 1 were observed and between 36-45 four respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

4.5 Socio-economical status, chemical analysis of milk products collected from Deoni tehsil

Table, 4.22 Production Statistics of milk products in Deoni tehsil

| Shop | Production (Kg.) | | | | | |
|--------------|------------------|------|-------|------------|---------|----------|
| | Khoa | Peda | Burfi | Gulabjamun | Basundi | Kalakand |
| 1 | 4 | 4 | 1 | 1 | 2 | 1 |
| 2 | 3 | 4 | 1 | 1 | 2 | 1 |
| 3 | 3 | 6 | 2 | 1 | 2 | 2 |
| 4 | 6 | 2 | 2 | 1 | 1 | 1 |
| 5 | 3 | 1 | 1 | 1 | 1 | 0 |
| 6 | 2 | 1 | 1 | 1 | 2 | 1 |
| 7 | 3 | 1 | 1 | 1 | 4 | 0 |
| 8 | 3 | 2 | 1 | 1 | 3 | 1 |
| 9 | 4 | 1 | 2 | 1 | 2 | 0 |
| 10 | 2 | 2 | 3 | 1 | 2 | 0 |
| Total | 33 | 24 | 15 | 10 | 21 | 7 |

4.5.1 Production Statistics of Khoa of Deoni tehsil

For the present investigation 10 production units were randomly selected from Deoni tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 2 kg per day whereas

some of them are selling 6 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various occasion always happen such as passing exam, child birth, new house, new job, marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.23 Physicochemical properties of khoa marketed in Deoni tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|------|
| 1 | Moisture | 24.12 | 0.93 |
| 2 | Fat | 26.05 | 0.74 |
| 3 | Protein | 19.47 | 0.25 |
| 4. | Sucrose | 26.47 | 0.40 |
| 5. | Ash | 3.7 | 0.08 |

4.5.7 Physicochemical properties of khoa marketed in Deoni tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 24.12. However, Rudreshappa and De, (1971) reported 20-25%, Patel, et al., (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 26.05%. The values of fat content were lower than those of Patel, et al., (1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for sucrose content. The sucrose content observed 26.47% whereas Patel et al., (1985) reported 18.85% of protein. *Khoa* analyzed for protein content. The protein content observed 19.47% whereas Patel et al., (1985) reported 16.30% of protein. The percentage of ash in *khoa* samples observed 3.7%. Patel, et al., (1985)

also reported ash 2.92% in khoa. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of khoa jalebi a unique product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various halwais. Acharya, *et al.* (2015). They studied the Gundpak, is a popular khoa based traditional milk product of Nepal. Twelve market samples of gundpak were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

Table, 4.24 Physicochemical properties of peda marketed in Deoni tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 19.01 | 0.32 |
| 2 | Fat | 18.04 | 0.22 |
| 3 | Protein | 14.73 | 0.26 |
| 4. | Total Sucrose | 45.91 | 0.57 |
| 5. | Ash | 2.31 | 0.17 |

4.5.8 Physicochemical properties of peda marketed in Deoni tehsil

The moisture content of *peda* is presented above table. The results showed that the moisture content in *peda* observed 19.01%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *peda* was 18.04%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 45.91%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Peda* also analyzed for protein content. The protein content observed 14.73%. The percentage of ash in *peda* samples observed 2.31%. Jha *et al.*, (2014) reported the proximate composition of *lal peda* 12.4% moisture, 16.7% sucrose, 17.2% protein, 18.5% fat, 3% ash and 32.2% sucrose. Londhe and Pal

(2008) reported moisture content in *peda* ranged from 12.01 (Dharwad *peda*) to 13.04% (Mathura *peda*), which is in close range with the current findings. Modha, *et al.*, standardized thabdi *peda* and they found thabdi *peda* to contain on an average 16.80 % fat, 17.48 % moisture, 11.25 % protein, 20.95 % sucrose, 29.99 % sucrose, and 3.53 % ash.

Table, 4.25 Physicochemical properties of burfi marketed in Deoni tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 16.77 | 0.43 |
| 2 | Fat | 20.68 | 0.45 |
| 3 | Protein | 14.89 | 0.10 |
| 4. | Total Sucrose | 44.63 | 0.10 |
| 5. | Ash | 3.05 | 0.05 |

4.5.9 Physicochemical properties of burfi marketed in Deoni tehsil

The moisture content of burfi is presented above table. The results showed that the moisture content in burfi observed 16.77%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of burfi was 20.68%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 44.63%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. burfi *also* analyzed for protein content. The protein content observed 14.89%. The percentage of ash in burfi samples observed 3.05%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.26 Physicochemical properties of Gulabjamun marketed in Deoni tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|------|
| 1 | Moisture | 30.73 | 0.88 |
| 2 | Fat | 9.35 | 0.58 |
| 3 | Protein | 8.13 | 0.13 |

| | | | |
|----|---------------|-------|------|
| 4. | Total Sucrose | 50.41 | 0.84 |
| 5. | Ash | 1.57 | 0.02 |

4.5.10 Physicochemical properties of gulabjamun marketed in Deoni tehsil

The moisture content of *gulabjamun* is presented above table. The results showed that the moisture content in *gulabjamun* observed 30.73%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *gulabjamun* was 9.35%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 50.41%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *gulabjamun* also analyzed for protein content. The protein content observed 8.13%. The percentage of ash in *gulabjamun* samples observed 1.57%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Yewale and Rao (2012) studied the standardization of reported the average gross chemical composition of the Khoa powder gulabjamun mix as moisture 9.43, fat 18.94, protein 14.03, ash 3.97 and total carbohydrates (by difference) 53.63%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.27 Physicochemical properties of Basundi marketed in Deoni tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 50.24 | 1.18 |
| 2 | Fat | 13.17 | 0.48 |
| 3 | Protein | 10.86 | 0.28 |
| 4. | Total Sucrose | 23.83 | 0.98 |
| 5. | Ash | 1.73 | 0.04 |

4.5.11 Physicochemical properties of Basundi marketed in Deoni tehsil

The moisture content of *basundi* is presented above table. The results showed that the moisture content in *basundi* observed 50.24%. This variation could be attributed to uncontrolled heating and concentration of milk. However, values of such product were higher than those of De, (1980) and Patel and Upadhyay, (2004a). The fat content of *basundi* was observed 13.17%. The values of fat content were higher than those of Patel and Upadhyay, (2004a) and Dharaiya, *et al.*, (2010). The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 23.83%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Basundi* analyzed for protein content. The protein content observed 10.86. The percentage of ash in *basundi* samples observed 1.83%. Patel and Upadhyay, (2001) also reported variations in chemical quality of *basundi* sold in Gujarat state. Gaikwad and Hembade (2012) also reported the moisture percentage $27.71 \pm 2.18\%$ protein content 12.99%, fat ranged between 14.83-22.14% whereas the average fat, $17.12 \pm 3.39\%$, sucrose $33.23 \pm 5.45\%$, ash $1.95 \pm 0.12\%$.

Table, 4.28 Physicochemical properties of Kalakand marketed in Deoni tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 26.61 | 0.49 |
| 2 | Fat | 21.07 | 0.29 |
| 3 | Protein | 18.88 | 0.58 |
| 4. | Total Sucrose | 29.73 | 0.28 |
| 5. | Ash | 2.64 | 0.10 |

4.5.12 Physicochemical properties of kalakand marketed in Deoni tehsil

The moisture content of *kalakand* is presented above table. The results showed that the moisture content in *kalakand* observed 26.61%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *kalakand* was 21.07%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product.

Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 29.73%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *kalakand* also analyzed for protein content. The protein content observed 18.88%. The percentage of ash in *kalakand* samples observed 2.64%. Singh and Gopal (2006) reported fat (16.04%), protein (14.19%), sucrose (35.46%) and ash (1.53%) in *kalakand*. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.29 Educational changes of sweetmeat sellers of Deoni tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|--------------|------------------------------------|--------------------------------------|--|
| 1 | Nil | 5 th | Graduate |
| 2 | Nil | 4 th | Graduate |
| 3 | Nil | 12 th | Graduate |
| 4 | Nil | 12 th | Diploma |
| 5 | Nil | Nil | Graduate |
| 6 | Nil | Nil | Graduate |
| 7 | Nil | 10 th | Graduate |
| 8 | Nil | 8 th | Graduate |
| 9 | Nil | 12 th | 12 th |
| 10 | Nil | 12 th | 12 th |

4.5.13 Educational changes of sweetmeat sellers of Deoni tehsil

Table, 4.69 shows the educational changes of sweetmeat sellers of Deoni district. From the table it is observed that the 100% of members were illiterate when they had started their business. Due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they

educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

Table, 4.30. Socioeconomic profile of the respondents in Deoni tehsil (N=10)

| Sr. No. | Factors | Number of respondents | | |
|---------|-----------------------------|-----------------------|------------|--|
| | | Number | Percentage | |
| 1. | Age (in years) | | | |
| | Below 25 | 1 | 10 | |
| | 26-35 | 3 | 30 | |
| | 36-45 | 2 | 20 | |
| | Above 46 | 4 | 40 | |
| 2. | Monthly income level | | | |
| | Below 5000 | 1 | 10 | |
| | 5001-10000 | 7 | 70 | |
| | 10001-15000 | 2 | 20 | |
| | Above 15000 | 0 | 0 | |

4.5.14 Socioeconomic profile of the respondents in Deoni tehsil

Education is one of the most important determinants of a person's social status. The table, 4.70 shows that very few respondents observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 26-35 only 3 were observed and between 36-45 two respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

4.6 Socio-economical status, chemical analysis of milk products collected from Jalkot tehsil

Table, 4.31 Production Statistics of Khoa of Jalkot tehsil

| Shop | Production (Kg.) | | | | | |
|--------------|------------------|------|-------|------------|---------|----------|
| | Khoa | Peda | Burfi | Gulabjamun | Basundi | Kalakand |
| 1 | 8 | 7 | 2 | 1 | 2 | 1 |
| 2 | 6 | 4 | 2 | 1 | 2 | 1 |
| 3 | 3 | 2 | 1 | 1 | 2 | 2 |
| 4 | 5 | 2 | 2 | 1 | 1 | 1 |
| 5 | 4 | 2 | 1 | 1 | 1 | 0 |
| 6 | 1 | 2 | 1 | 1 | 2 | 1 |
| 7 | 3 | 1 | 1 | 1 | 4 | 0 |
| 8 | 2 | 1 | 2 | 1 | 3 | 1 |
| 9 | 6 | 1 | 1 | 1 | 2 | 0 |
| 10 | 2 | 1 | 1 | 1 | 2 | 1 |
| Total | 40 | 23 | 14 | 10 | 21 | 8 |

4.6.1 Production Statistics of Khoa of Jalkot tehsil

For the present investigation 10 production units were randomly selected from Jalkot tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 1 kg per day whereas some of them are selling 8 kg per day. The production level of the product varies with

increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various occasion always happen such as passing exam, child birth, new house, new job, marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.32 Physicochemical properties of khoa marketed in Jalkot tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|------|
| 1 | Moisture | 26.04 | 0.49 |
| 2 | Fat | 25.03 | 0.41 |
| 3 | Protein | 18.93 | 0.52 |
| 4. | Lactose | 26.41 | 0.57 |
| 5. | Ash | 3.63 | 0.12 |

4.6.7 Physicochemical properties of khoa marketed in Jalkot tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 26.04%. However, Rudreshappa and De, (1971) reported 20-25%, Patel, et al., (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 25.03%. The values of fat content were lower than those of Patel, et al., (1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for lactose content. The lactose content observed 26.41% whereas Patel et al., (1985) reported 18.85% of lactose. *Khoa* analyzed for protein content. The protein content observed 18.93% whereas Patel et al., (1985) reported 16.30% of protein. The percentage of ash in *khoa* samples observed 3.63%. Patel, et al., (1985) also reported ash 2.92% in *khoa*. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of *khoa jalebi* a unique

product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various halwais. Acharya, *et al.* (2015). They studied the Gundpak, is a popular khoa based traditional milk product of Nepal. Twelve market samples of gundpak were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

Table, 4.33 Physicochemical properties of peda marketed in Jalkot tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 18.98 | 0.54 |
| 2 | Fat | 18.20 | 0.32 |
| 3 | Protein | 14.42 | 0.38 |
| 4. | Total Sucrose | 46.04 | 0.55 |
| 5. | Ash | 2.33 | 0.05 |

4.6.8 Physicochemical properties of peda marketed in Jalkot tehsil

The moisture content of *peda* is presented above table. The results showed that the moisture content in *peda* observed 18.98%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *peda* was 18.20%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 46.04%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Peda* also analyzed for protein content. The protein content observed 14.42%. The percentage of ash in *peda* samples observed 2.33%. Jha *et al.*, (2014) reported the proximate composition of *lal peda* 12.4% moisture, 16.7% lactose, 17.2% protein, 18.5% fat, 3% ash and 32.2% sucrose. Londhe and Pal (2008) reported moisture content in *peda* ranged from 12.01 (Dharwad *peda*) to

13.04% (Mathura *peda*), which is in close range with the current findings. Modha, *et al.*, standardized thabdi peda and they found thabdi peda to contain on an average 16.80 % fat, 17.48 % moisture, 11.25 % protein, 20.95 % lactose, 29.99 % sucrose, and 3.53 % ash.

Table, 4.34 Physicochemical properties of burfi marketed in Jalkot tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 17.43 | 0.30 |
| 2 | Fat | 20.08 | 0.48 |
| 3 | Protein | 15.06 | 0.51 |
| 4. | Total Sucrose | 44.33 | 0.33 |
| 5. | Ash | 3.02 | 0.10 |

4.6.9 Physicochemical properties of burfi marketed in Jalkot tehsil

The moisture content of burfi is presented above table. The results showed that the moisture content in burfi observed 17.43%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of burfi was 20.08%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 44.33%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. Burfi *also* analyzed for protein content. The protein content observed 15.06%. The percentage of ash in burfi samples observed 3.02%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.35 Physicochemical properties of Gulabjamun marketed in Jalkot tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|------|
| 1 | Moisture | 30.13 | 0.75 |
| 2 | Fat | 9.35 | 0.58 |
| 3 | Protein | 8.53 | 0.44 |

| | | | |
|----|---------------|-------|------|
| 4. | Total Sucrose | 50.38 | 0.88 |
| 5. | Ash | 1.60 | 0.02 |

4.6.10 Physicochemical properties of gulabjamun marketed in Jalkot tehsil

The moisture content of *gulabjamun* is presented above table. The results showed that the moisture content in *gulabjamun* observed 30.13%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *gulabjamun* was 9.35%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 50.38%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *gulabjamun* also analyzed for protein content. The protein content observed 8.53%. The percentage of ash in *gulabjamun* samples observed 1.60%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Yewale and Rao (2012) studied the standardization of reported the average gross chemical composition of the Khoa powder gulabjamun mix as moisture 9.43, fat 18.94, protein 14.03, ash 3.97 and total carbohydrates (by difference) 53.63%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.36 Physicochemical properties of Basundi marketed in Jalkot tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|----------|
| 1 | Moisture | 50.9 | 1.208305 |
| 2 | Fat | 12.84 | 0.398999 |
| 3 | Protein | 10.7 | 0.163299 |
| 4. | Total Sucrose | 23.77 | 1.019052 |
| 5. | Ash | 1.7 | 0.08165 |

4.6.11 Physicochemical properties of Basundi marketed in Jalkot tehsil

The moisture content of *basundi* is presented above table. The results showed that the moisture content in *basundi* observed 50.9%. This variation could be attributed to uncontrolled heating and concentration of milk. However, values of such product were lower than those of De, (1980) and Patel and Upadhyay, (2004a). The fat content of *basundi* was observed 12.84%. The values of fat content were higher than those of Patel and Upadhyay, (2004a) and Dharaiya, *et al.*, (2010). The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 23.77%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Basundi* analyzed for protein content. The protein content observed 10.70. The percentage of ash in *basundi* samples observed 1.7%. Patel and Upadhyay, (2001) also reported variations in chemical quality of *basundi* sold in Gujarat state. Gaikwad and Hembade (2012) also reported the moisture percentage 27.71±2.18% protein content 12.99%, fat ranged between 14.83-22.14% whereas the average fat, 17.12±3.39%, sucrose 33.23±5.45%, ash 1.95±0.12%.

Table, 4.37 Physicochemical properties of Kalakand marketed in Jalkot tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 26.55 | 0.41 |
| 2 | Fat | 21.14 | 0.19 |
| 3 | Protein | 18.61 | 0.18 |
| 4. | Total Sucrose | 29.73 | 0.28 |
| 5. | Ash | 2.70 | 0.03 |

4.6.12 Physicochemical properties of kalakand marketed in Jalkot tehsil

The moisture content of *kalakand* is presented above table. The results showed that the moisture content in *kalakand* ranged observed 26.55%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *kalakand* was 21.14%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product.

Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 29.73%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *kalakand* also analyzed for protein content. The protein content observed 18.61%. The percentage of ash in *kalakand* samples observed 2.70%. Singh and Gopal (2006) reported fat (16.04%), protein (14.19%), sucrose (35.46%) and ash (1.53%) in *kalakand*. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.38 Educational changes of sweetmeat sellers of Jalkot tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|-------|-----------------------------|-------------------------------|---------------------------------|
| 1 | Nil | 10 th | Graduate |
| 2 | Nil | 8 th | Graduate |
| 3 | Nil | 12 th | Teacher |
| 4 | 5 th | 12 th | Teacher |
| 5 | Nil | Graduate | Graduate |
| 6 | Nil | Graduate | Graduate |
| 7 | Nil | 10 th | Teacher |
| 8 | 4 th | 12 th | Graduate |
| 9 | Nil | 10 th | Graduate |
| 10 | Nil | 4 th | 12 th |

4.6.13 Educational changes of sweetmeat sellers of Jalkot tehsil

Table, 4.83 shows the educational changes of sweetmeat sellers of Jalkot district. From the table it is observed that the 80% of members were illiterate when they had started their business. And only 20% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of

founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

Table, 4.39. Socioeconomic profile of the respondents in Jalkot tehsil (N=10)

| Sr. No. | Factors | Number of respondents | | |
|---------|-----------------------------|-----------------------|------------|--|
| | | Number | Percentage | |
| 1. | Age (in years) | | | |
| | Below 25 | 0 | 0 | |
| | 26-35 | 2 | 20 | |
| | 36-45 | 1 | 10 | |
| | Above 46 | 7 | 70 | |
| 2. | Monthly income level | | | |
| | Below 5000 | 2 | 20 | |
| | 5001-10000 | 7 | 70 | |
| | 10001-15000 | 1 | 10 | |
| | Above 15000 | 0 | 0 | |

4.6.14 Socioeconomic profile of the respondents in Jalkot tehsil

Education is one of the most important determinants of a person's social status. The table, 4.84 shows that very few respondents observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 6-35 only 4 were observed and between 36-45 eight respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

4.7 Socio-economical status, chemical analysis of milk products collected from Renapur tehsil

Table, 4.40 Production Statistics of milk products in Renapur tehsil

| Shop | Production (Kg.) | | | | | |
|--------------|------------------|------|-------|------------|---------|----------|
| | Khoa | Peda | Burfi | Gulabjamun | Basundi | Kalakand |
| 1 | 10 | 8 | 2 | 1 | 6 | 1 |
| 2 | 9 | 9 | 3 | 0 | 5 | 1 |
| 3 | 8 | 9 | 1 | 1 | 4 | 2 |
| 4 | 7 | 12 | 1 | 1 | 2 | 2 |
| 5 | 6 | 7 | 2 | 1 | 3 | 0 |
| 6 | 5 | 6 | 2 | 1 | 4 | 1 |
| 7 | 8 | 5 | 2 | 1 | 4 | 1 |
| 8 | 9 | 7 | 1 | 1 | 2 | 0 |
| 9 | 7 | 4 | 3 | 1 | 2 | 1 |
| 10 | 4 | 3 | 2 | 1 | 3 | 1 |
| Total | 73 | 70 | 19 | 9 | 35 | 10 |

4.7.1 Production Statistics of Khoa of Renapur tehsil

For the present investigation 10 production units were randomly selected from Renapur tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 4 kg per day whereas some of them are selling 10 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various occasion always happen such as passing exam, child birth, new house, new job,

marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.41 Physicochemical properties of khoa marketed in Renapur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|------|
| 1 | Moisture | 25.46 | 1.60 |
| 2 | Fat | 25.46 | 1.16 |
| 3 | Protein | 19.33 | 0.18 |
| 4. | Lactose | 26.36 | 0.30 |
| 5. | Ash | 3.72 | 0.08 |

4.7.7 Physicochemical properties of khoa marketed in Renapur tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 25.46%. However, Rudreshappa and De, (1971) reported 20-25%, Patel, *et al.*, (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 25.46%. The values of fat content were lower than those of Patel, *et al.*, (1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for lactose content. The lactose content observed 26.36% whereas Patel *et al.*, (1985) reported 18.85% of lactose. *Khoa* analyzed for protein content. The protein content observed 19.33% whereas Patel *et al.*, (1985) reported 16.30% of protein. The percentage of ash in *khoa* samples observed 3.72%. Patel, *et al.*, (1985) also reported ash 2.92% in *khoa*. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of *khoa jalebi* a unique product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various *halwais*. Acharya, *et al.*

(2015). They studied the Gundpak, is a popular khoa based traditional milk product of Nepal. Twelve market samples of gundpak were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

Table, 4.42 Physicochemical properties of peda marketed in Renapur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 18.74 | 0.21 |
| 2 | Fat | 18.17 | 0.28 |
| 3 | Protein | 14.86 | 0.24 |
| 4. | Total Sucrose | 46.21 | 0.31 |
| 5. | Ash | 2.10 | 0.17 |

4.7.8 Physicochemical properties of peda marketed in Renapur tehsil

The moisture content of *peda* is presented above table. The results showed that the moisture content in *peda* observed 18.74%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *peda* was 18.17%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 46.21%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Peda* also analyzed for protein content. The protein content observed 14.86%. The percentage of ash in *peda* samples observed 2.10%. Jha *et al.*, (2014) reported the proximate composition of *lal peda* 12.4% moisture, 16.7% lactose, 17.2% protein, 18.5% fat, 3% ash and 32.2% sucrose. Londhe and Pal (2008) reported moisture content in *peda* ranged from 12.01 (Dharwad *peda*) to 13.04% (Mathura *peda*), which is in close range with the current findings. Modha, *et al.*, standardized thabdi *peda* and they found thabdi *peda* to contain on an average

16.80 % fat, 17.48 % moisture, 11.25 % protein, 20.95 % lactose, 29.99 % sucrose, and 3.53 % ash.

Table, 4.43 Physicochemical properties of burfi marketed in Renapur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 17.20 | 0.04 |
| 2 | Fat | 20.25 | 0.25 |
| 3 | Protein | 15.06 | 0.51 |
| 4. | Total Sucrose | 44.33 | 0.33 |
| 5. | Ash | 3.05 | 0.05 |

4.7.9 Physicochemical properties of burfi marketed in Renapur tehsil

The moisture content of burfi is presented above table. The results showed that the moisture content in burfi observed 17.20%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of burfi was 20.25%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 44.33%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. burfi *also* analyzed for protein content. The protein content observed 15.06%. The percentage of ash in burfi samples observed 3.05%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.44 Physicochemical properties of Gulabjamun marketed in Renapur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 30.71 | 0.41 |
| 2 | Fat | 9.25 | 0.45 |
| 3 | Protein | 8.29 | 0.03 |
| 4. | Total Sucrose | 50.08 | 0.44 |

| | | | |
|----|-----|------|------|
| 5. | Ash | 1.60 | 0.02 |
|----|-----|------|------|

4.7.10 Physicochemical properties of gulabjamun marketed in Renapur tehsil

The moisture content of *gulabjamun* is presented above table. The results showed that the moisture content in *gulabjamun* ranged observed 30.71%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *gulabjamun* was 9.25%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 50.08%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *gulabjamun* also analyzed for protein content. The protein content observed 8.29%. The percentage of ash in *gulabjamun* samples observed 1.60%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Yewale and Rao (2012) studied the standardization of reported the average gross chemical composition of the Khoa powder gulabjamun mix as moisture 9.43, fat 18.94, protein 14.03, ash 3.97 and total carbohydrates (by difference) 53.63%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.45 Physicochemical properties of Basundi marketed in Renapur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 50.23 | 1.18 |
| 2 | Fat | 12.52 | 0.73 |
| 3 | Protein | 10.76 | 0.18 |
| 4. | Total Sucrose | 24.76 | 1.38 |
| 5. | Ash | 1.73 | 0.04 |

4.7.11 Physicochemical properties of Basundi marketed in Renapur tehsil

The moisture content of *basundi* is presented above table. The results showed that the moisture content in *basundi* observed 50.23%. This variation could be

attributed to uncontrolled heating and concentration of milk. However, values of such product were lower than those of De, (1980) and Patel and Upadhyay, (2004a). The fat content of *basundi* was observed 12.52%. The values of fat content were higher than those of Patel and Upadhyay, (2004a) and Dharaiya, *et al.*, (2010). The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 24.76%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Basundi* analyzed for protein content. The protein content observed 10.76. The percentage of ash in *basundi* samples observed 1.73%. Patel and Upadhyay, (2001) also reported variations in chemical quality of *basundi* sold in Gujarat state. Gaikwad and Hembade (2012) also reported the moisture percentage $27.71 \pm 2.18\%$ protein content 12.99%, fat ranged between 14.83-22.14% whereas the average fat, $17.12 \pm 3.39\%$, sucrose $33.23 \pm 5.45\%$, ash $1.95 \pm 0.12\%$.

Table, 4.46 Physicochemical properties of Kalakand marketed in Renapur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 26.58 | 0.45 |
| 2 | Fat | 21.10 | 0.24 |
| 3 | Protein | 18.36 | 0.14 |
| 4. | Total Sucrose | 30.09 | 0.80 |
| 5. | Ash | 2.70 | 0.03 |

4.7.12 Physicochemical properties of kalakand marketed in Renapur tehsil

The moisture content of *kalakand* is presented above table. The results showed that the moisture content in *kalakand* ranged 26.58%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *kalakand* was 21.10%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 30.09%. Higher sugar might be used by manufacturers for getting

higher profit or higher sugar might be profound by consumers. *kalakand* also analyzed for protein content. The protein content observed 18.36%. The percentage of ash in *kalakand* samples observed 2.70%. Singh and Gopal (2006) reported fat (16.04%), protein (14.19%), sucrose (35.46%) and ash (1.53%) in *kalakand*. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.47 Educational changes of sweetmeat sellers of Renapur tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|-------|-----------------------------|-------------------------------|---------------------------------|
| 1 | 5 th | 10 th | Graduate |
| 2 | Nil | 8 th | Graduate |
| 3 | Nil | Graduate | Doctor |
| 4 | 8 th | 10 th | Teacher |
| 5 | Nil | 12 th | Graduate |
| 6 | Nil | 10 th | Graduate |
| 7 | 4 th | 4 th | Engineer |
| 8 | Nil | 8 th | Teacher |
| 9 | Nil | Nil | Post graduate |
| 10 | Nil | Nil | Diploma |

4.7.13 Educational changes of sweetmeat sellers of Renapur tehsil

Table, 4.97 shows the educational changes of sweetmeat sellers of Renapur district. From the table it is observed that the 70% of members were illiterate when they had started their business. And only 30% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

Table, 4.48. Socioeconomic profile of the respondents in Renapur tehsil (N=10)

| Sr. No. | Factors | Number of respondents | | |
|---------|-----------------------------|-----------------------|------------|--|
| | | Number | Percentage | |
| 1. | Age (in years) | | | |
| | Below 25 | 0 | 0 | |
| | 26-35 | 1 | 10 | |
| | 36-45 | 2 | 20 | |
| | Above 46 | 7 | 70 | |
| 2. | Monthly income level | | | |
| | Below 5000 | 0 | 0 | |
| | 5001-10000 | 5 | 50 | |
| | 10001-15000 | 3 | 30 | |
| | Above 15000 | 2 | 20 | |

4.7.14 Socioeconomic profile of the respondents in Renapur tehsil

Education is one of the most important determinants of a person's social status. The table, 4.98 shows that respondents observed below the age of 25 was nil. The highest number of respondents observed in above age level 46. However between age 26-35 only 1 was observed and between 36-45 two respondents were observed. Monthly income from sale of milk product was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

4.8 Socio-economical status, chemical analysis of milk products collected from Ausa tehsil

Table, 4.49 Production Statistics of milk products in Ausa tehsil

| Shop | Production (Kg.) | | | | | |
|--------------|------------------|------|-------|------------|---------|----------|
| | Khoa | Peda | Burfi | Gulabjamun | Basundi | Kalakand |
| 1 | 7 | 4 | 2 | 1 | 2 | 1 |
| 2 | 6 | 3 | 3 | 0 | 1 | 1 |
| 3 | 4 | 3 | 2 | 1 | 4 | 1 |
| 4 | 5 | 4 | 2 | 2 | 2 | 1 |
| 5 | 7 | 2 | 1 | 2 | 2 | 0 |
| 6 | 6 | 2 | 1 | 1 | 1 | 1 |
| 7 | 4 | 6 | 2 | 1 | 3 | 1 |
| 8 | 9 | 7 | 4 | 1 | 1 | 0 |
| 9 | 8 | 7 | 6 | 1 | 2 | 1 |
| 10 | 6 | 5 | 8 | 1 | 2 | 1 |
| Total | 62 | 43 | 31 | 11 | 20 | 8 |

4.8.1 Production Statistics of Khoa of Ausa tehsil

For the present investigation 10 production units were randomly selected from Ausa tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 4 kg per day whereas some of them are selling 9 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various

occasion always happen such as passing exam, child birth, new house, new job, marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.50 Physicochemical properties of khoa marketed in Ausa tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|-------|
| 1 | Moisture | 25.40 | 1.55 |
| 2 | Fat | 25.41 | 1.20 |
| 3 | Protein | 19.11 | 0.122 |
| 4. | Lactose | 26.56 | 0.32 |
| 5. | Ash | 3.53 | 0.16 |

4.8.7 Physicochemical properties of khoa marketed in Ausa tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 25.40%. However, Rudreshappa and De, (1971) reported 20-25%, Patel, et al., (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 25.41%. The values of fat content were lower than those of Patel, et al., (1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for lactose content. The lactose content observed 26.56% whereas Patel et al., (1985) reported 18.85% of protein. *Khoa* analyzed for protein content. The protein content observed 19.11% whereas Patel et al., (1985) reported 16.30% of protein. The percentage of ash in *khoa* samples observed 3.53%. Patel, et al., (1985) also reported ash 2.92% in *khoa*. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of *khoa jalebi* a unique product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various *halwais*. Acharya, *et al.*

(2015). They studied the Gundpak, is a popular khoa based traditional milk product of Nepal. Twelve market samples of gundpak were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

Table, 4.51 Physicochemical properties of peda marketed in Ausa tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 18.98 | 0.54 |
| 2 | Fat | 18.17 | 0.28 |
| 3 | Protein | 14.32 | 0.52 |
| 4. | Total Sucrose | 46.13 | 0.43 |
| 5. | Ash | 2.35 | 0.07 |

4.8.8 Physicochemical properties of peda marketed in Ausa tehsil

The moisture content of *peda* is presented above table. The results showed that the moisture content in *peda* observed 18.98%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *peda* was 18.17%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 46.13%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Peda* also analyzed for protein content. The protein content observed 14.32%. The percentage of ash in *peda* samples observed 2.35%. Jha *et al.*, (2014) reported the proximate composition of *lal peda* 12.4% moisture, 16.7% lactose, 17.2% protein, 18.5% fat, 3% ash and 32.2% sucrose. Londhe and Pal (2008) reported moisture content in *peda* ranged from 12.01 (Dharwad *peda*) to 13.04% (Mathura *peda*), which is in close range with the current findings. Modha, *et al.*, standardized thabdi *peda* and they found thabdi *peda* to contain on an average

16.80 % fat, 17.48 % moisture, 11.25 % protein, 20.95 % lactose, 29.99 % sucrose, and 3.53 % ash.

Table, 4.52 Physicochemical properties of burfi marketed in Ausa tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 17.37 | 0.20 |
| 2 | Fat | 20.11 | 0.44 |
| 3 | Protein | 14.93 | 0.33 |
| 4. | Total Sucrose | 44.83 | 0.38 |
| 5. | Ash | 2.99 | 0.14 |

4.8.9 Physicochemical properties of burfi marketed in Ausa tehsil

The moisture content of burfi is presented above table. The results showed that the moisture content in burfi ranged observed 17.37%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of burfi was 20.11%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 44.83%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. burfi *also* analyzed for protein content. The protein content observed 14.93%. The percentage of ash in burfi samples observed 2.99%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.53 Physicochemical properties of Gulabjamun marketed in Ausa tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 30.11 | 0.77 |
| 2 | Fat | 9.75 | 1.14 |
| 3 | Protein | 8.49 | 0.39 |
| 4. | Total Sucrose | 50.16 | 1.15 |
| 5. | Ash | 1.59 | 0.01 |

4.8.10 Physicochemical properties of gulabjamun marketed in Ausa tehsil

The moisture content of *gulabjamun* is presented above table. The results showed that the moisture content in *gulabjamun* observed 30.11%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *gulabjamun* was 9.75%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 50.16%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *gulabjamun* also analyzed for protein content. The protein content observed 8.49%. The percentage of ash in *gulabjamun* samples observed 1.59%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Yewale and Rao (2012) studied the standardization of reported the average gross chemical composition of the Khoa powder gulabjamun mix as moisture 9.43, fat 18.94, protein 14.03, ash 3.97 and total carbohydrates (by difference) 53.63%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.54 Physicochemical properties of Basundi marketed in Ausa tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 50.91 | 1.21 |
| 2 | Fat | 12.82 | 0.41 |
| 3 | Protein | 10.73 | 0.16 |
| 4. | Total Sucrose | 23.96 | 0.94 |
| 5. | Ash | 1.73 | 0.04 |

4.8.11 Physicochemical properties of Basundi marketed in Ausa tehsil

The moisture content of *basundi* is presented above table. The results showed that the moisture content in *basundi* observed 50.16%. This variation could be attributed to uncontrolled heating and concentration of milk. However, values of such

product were lower than those of De, (1980) and Patel and Upadhyay, (2004a). The fat content of *basundi* was observed 12.82%. The values of fat content were higher than those of Patel and Upadhyay, (2004a) and Dharaiya, *et al.*, (2010). The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 23.96%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Basundi* analyzed for protein content. The protein content observed 10.73. The percentage of ash in *basundi* samples observed 1.73%. Patel and Upadhyay, (2001) also reported variations in chemical quality of *basundi* sold in Gujarat state. Gaikwad and Hembade (2012) also reported the moisture percentage 27.71±2.18% protein content 12.99%, fat ranged between 14.83-22.14% whereas the average fat, 17.12±3.39%, sucrose 33.23±5.45%t, ash 1.95±0.12%.

Table, 4.55 Physicochemical properties of Kalakand marketed in Ausa tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 26.28 | 0.05 |
| 2 | Fat | 21.54 | 0.37 |
| 3 | Protein | 18.73 | 0.37 |
| 4. | Total Sucrose | 29.73 | 0.28 |
| 5. | Ash | 2.70 | 0.03 |

4.8.12 Physicochemical properties of kalakand marketed in Ausa tehsil

The moisture content of *kalakand* is presented above table. The results showed that the moisture content in *kalakand* observed 26.28%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *kalakand* was 21.54%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 29.73%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *kalakand also*

analyzed for protein content. The protein content observed 18.73%. The percentage of ash in *kalakand* samples observed 2.70%. Singh and Gopal (2006) reported fat (16.04%), protein (14.19%), sucrose (35.46%) and ash (1.53%) in kalakand. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.56 Educational changes of sweetmeat sellers of Ausa tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|-------|-----------------------------|-------------------------------|---------------------------------|
| 1 | Nil | Nil | Graduate |
| 2 | Nil | Nil | Graduate |
| 3 | Nil | Nil | Teacher |
| 4 | Nil | Nil | Post graduate |
| 5 | Nil | Nil | Graduate |
| 6 | Nil | Nil | Graduate |
| 7 | Nil | Nil | Post graduate |
| 8 | Nil | Nil | Graduate |
| 9 | Nil | Graduate | 12 th |
| 10 | Nil | 12 th | Engineer |

4.8.13 Educational changes of sweetmeat sellers of Ausa tehsil

Table, 4.111 shows the educational changes of sweetmeat sellers of Ausa district. From the table it is observed that the 100% of members were illiterate when they had started their business. But due to poor economical condition they have to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

Table, 4.57. Socioeconomic profile of the respondents in Ausa tehsil (N=10)

| Sr. No. | Factors | Number of respondents | |
|---------|-----------------------------|-----------------------|------------|
| | | Number | Percentage |
| 1. | Age (in years) | | |
| | Below 25 | 0 | 0 |
| | 26-35 | 1 | 10 |
| | 36-45 | 2 | 20 |
| | Above 46 | 7 | 70 |
| 2. | Monthly income level | | |
| | Below 5000 | 0 | 0 |
| | 5001-10000 | 5 | 50 |
| | 10001-15000 | 3 | 30 |
| | Above 15000 | 2 | 20 |

4.8.14 Socioeconomic profile of the respondents in Ausa tehsil

Education is one of the most important determinants of a person's social status. The table, 4.112 shows that nobody observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 26-35 only 1 was observed and between 36-45 two respondents were observed. Monthly income from sale of milk product was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

4.9 Socio-economical status, chemical analysis of milk products collected from Chakur tehsil

Table, 4.58 Production Statistics of milk products in Chakur tehsil

| Shop | Production (Kg.) | | | | | |
|--------------|------------------|------|-------|------------|---------|----------|
| | Khoa | Peda | Burfi | Gulabjamun | Basundi | Kalakand |
| 1 | 2 | 2 | 2 | 1 | 3 | 1 |
| 2 | 4 | 2 | 2 | 0 | 2 | 1 |
| 3 | 3 | 3 | 2 | 1 | 5 | 2 |
| 4 | 2 | 1 | 1 | 1 | 6 | 1 |
| 5 | 2 | 1 | 1 | 1 | 4 | 0 |
| 6 | 3 | 2 | 1 | 0 | 6 | 2 |
| 7 | 4 | 2 | 1 | 1 | 4 | 1 |
| 8 | 6 | 1 | 2 | 1 | 1 | 0 |
| 9 | 6 | 3 | 1 | 1 | 4 | 0 |
| 10 | 8 | 3 | 1 | 1 | 2 | 0 |
| Total | 40 | 20 | 14 | 8 | 37 | 8 |

4.9.1 Production Statistics of Khoa of Chakur tehsil

For the present investigation 10 production units were randomly selected from Chakur tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 2 kg per day whereas some of them are selling 8 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various occasion always happen such as passing exam, child birth, new house, new job,

marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.59 Physicochemical properties of khoa marketed in Chakur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|------|
| 1 | Moisture | 25.40 | 0.97 |
| 2 | Fat | 25.37 | 0.67 |
| 3 | Protein | 18.96 | 0.48 |
| 4. | Lactose | 26.60 | 0.85 |
| 5. | Ash | 3.66 | 0.09 |

4.9.7 Physicochemical properties of khoa marketed in Chakur tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 25.40%. However, Rudreshappa and De, (1971) reported 20-25%, Patel, et al., (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 25.37%. The values of fat content were lower than those of Patel, et al., (1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for lactose content. The lactose content observed 26.60% whereas Patel et al., (1985) reported 18.85% of protein. *Khoa* analyzed for protein content. The protein content observed 18.96% whereas Patel et al., (1985) reported 16.30% of protein. The percentage of ash in *khoa* samples observed 2.32%. Patel, et al., (1985) also reported ash 3.66% in *khoa*. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of *khoa jalebi* a unique product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various *halwais*. Acharya, *et al.* (2015). They studied the Gundpak, is a popular *khoa* based traditional milk product

of Nepal. Twelve market samples of gundpak were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

Table, 4.60 Physicochemical properties of peda marketed in Chakur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 18.89 | 0.42 |
| 2 | Fat | 18.03 | 0.10 |
| 3 | Protein | 14.84 | 0.21 |
| 4. | Total Sucrose | 46.06 | 0.52 |
| 5. | Ash | 2.28 | 0.12 |

4.9.8 Physicochemical properties of peda marketed in Chakur tehsil

The moisture content of *peda* is presented above table. The results showed that the moisture content in *peda* observed 18.03%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *peda* was 18.03%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 46.06%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Peda* also analyzed for protein content. The protein content observed 14.84%. The percentage of ash in *peda* samples observed 2.28%. Jha *et al.*, (2014) reported the proximate composition of *lal peda* 12.4% moisture, 16.7% lactose, 17.2% protein, 18.5% fat, 3% ash and 32.2% sucrose. Londhe and Pal (2008) reported moisture content in *peda* ranged from 12.01 (Dharwad *peda*) to 13.04% (Mathura *peda*), which is in close range with the current findings. Modha, *et al.*, standardized thabdi *peda* and they found thabdi *peda* to contain on an average 16.80 % fat, 17.48 % moisture, 11.25 % protein, 20.95 % lactose, 29.99 % sucrose, and 3.53 % ash.

Table, 4.61 Physicochemical properties of burfi marketed in Chakur tehsil

| Sr. no. | Constituents | Mean | SD |
|----------------|---------------------|-------------|-----------|
| 1 | Moisture | 17.42 | 0.28 |
| 2 | Fat | 20.01 | 0.49 |
| 3 | Protein | 15.03 | 0.29 |
| 4. | Total Sucrose | 44.97 | 0.39 |
| 5. | Ash | 2.95 | 0.13 |

4.9.9 Physicochemical properties of burfi marketed in Chakur tehsil

The moisture content of burfi is presented above table. The results showed that the moisture content in burfi observed 30.56%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of burfi was 20.01%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 44.97%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. burfi *also* analyzed for protein content. The protein content observed 15.03%. The percentage of ash in burfi samples observed 2.95%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.62 Physicochemical properties of Gulabjamun marketed in Chakur tehsil

| Sr. no. | Constituents | Mean | SD |
|----------------|---------------------|-------------|-----------|
| 1 | Moisture | 30.65 | 0.82 |
| 2 | Fat | 9.11 | 0.30 |
| 3 | Protein | 8.24 | 0.05 |
| 4. | Total Sucrose | 50.71 | 0.57 |
| 5. | Ash | 1.54 | 0.07 |

4.9.10 Physicochemical properties of gulabjamun marketed in Chakur tehsil

The moisture content of *gulabjamun* is presented above table. The results showed that the moisture content in *gulabjamun* observed 30.65%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *gulabjamun* was 9.11%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 50.71%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *gulabjamun* also analyzed for protein content. The protein content observed 8.24%. The percentage of ash in *gulabjamun* samples observed 1.54%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Yewale and Rao (2012) studied the standardization of reported the average gross chemical composition of the Khoa powder gulabjamun mix as moisture 9.43, fat 18.94, protein 14.03, ash 3.97 and total carbohydrates (by difference) 53.63%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.63 Physicochemical properties of Basundi marketed in Chakur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 50.53 | 1.10 |
| 2 | Fat | 13.14 | 0.42 |
| 3 | Protein | 10.50 | 0.32 |
| 4. | Total Sucrose | 24.46 | 1.10 |
| 5. | Ash | 1.71 | 0.08 |

4.9.11 Physicochemical properties of Basundi marketed in Chakur tehsil

The moisture content of *basundi* is presented above table. The results showed that the moisture content in *basundi* observed 50.53%. This variation could be attributed to uncontrolled heating and concentration of milk. However, values of such

product were lower than those of De, (1980) and Patel and Upadhyay, (2004a). The fat content of *basundi* was observed 13.14%. The values of fat content were higher than those of Patel and Upadhyay, (2004a) and Dharaiya, *et al.*, (2010). The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 24.46%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Basundi* analyzed for protein content. The protein content observed 10.50%. The percentage of ash in *basundi* samples observed 1.71%. Patel and Upadhyay, (2001) also reported variations in chemical quality of *basundi* sold in Gujarat state. Gaikwad and Hembade (2012) also reported the moisture percentage 27.71±2.18% protein content 12.99%, fat ranged between 14.83-22.14% whereas the average fat, 17.12±3.39%, sucrose 33.23±5.45%t, ash 1.95±0.12%.

Table, 4.64 Physicochemical properties of Kalakand marketed in Chakur tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 26.57 | 0.43 |
| 2 | Fat | 21.68 | 0.58 |
| 3 | Protein | 18.82 | 0.50 |
| 4. | Total Sucrose | 29.69 | 0.23 |
| 5. | Ash | 2.70 | 0.03 |

4.9.12 Physicochemical properties of kalakand marketed in Chakur tehsil

The moisture content of *kalakand* is presented above table. The results showed that the moisture content in *kalakand* observed 26.57%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *kalakand* was 21.68%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 29.69%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *kalakand also*

analyzed for protein content. The protein content observed 18.82%. The percentage of ash in *kalakand* samples observed 2.70%. Singh and Gopal (2006) reported fat (16.04%), protein (14.19%), sucrose (35.46%) and ash (1.53%) in *kalakand*. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.65 Educational changes of sweetmeat sellers of Chakur tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|-------|-----------------------------|-------------------------------|---------------------------------|
| 1 | Nil | 5 th | 12 th |
| 2 | Nil | 4 th | Teacher |
| 3 | Nil | 12 th | Graduate |
| 4 | Nil | Nil | Graduate |
| 5 | Nil | Nil | Graduate |
| 6 | 5 th | Nil | Graduate |
| 7 | Nil | Graduate | Graduate |
| 8 | Nil | Nil | Post graduate |
| 9 | Nil | Graduate | Doctor |
| 10 | Nil | Nil | 12 th |

4.9.13 Educational changes of sweetmeat sellers of Chakur tehsil

Table, 4.125 shows the educational changes of sweetmeat sellers of Chakur district. From the table it is observed that the 90% of members were illiterate when they had started their business. And only 10% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

Table, 4.66. Socioeconomic profile of the respondents in Chakur tehsil (N=10)

| Sr. No. | Factors | Number of respondents | |
|---------|-----------------------------|-----------------------|------------|
| | | Number | Percentage |
| 1. | Age (in years) | | |
| | Below 25 | 0 | 0 |
| | 26-35 | 1 | 10 |
| | 36-45 | 2 | 20 |
| | Above 46 | 7 | 70 |
| 2. | Monthly income level | | |
| | Below 5000 | 1 | 10 |
| | 5001-10000 | 5 | 50 |
| | 10001-15000 | 3 | 30 |
| | Above 15000 | 1 | 10 |

4.9.14 Socioeconomic profile of the respondents in Chakur tehsil

Education is one of the most important determinants of a person's social status. The table, 4.126 shows that nobody observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 26-35 only 1 was observed and between 36-45 two respondents were observed. Monthly income from sale of milk product was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

4.10 Socio-economical status, chemical analysis of milk products collected from Shirur Anantpal tehsil

Table, 4.67 Production Statistics of milk products in Shirur Anantpal tehsil

| Shop | Production (Kg.) | | | | | |
|--------------|------------------|------|-------|------------|---------|----------|
| | Khoa | Peda | Burfi | Gulabjamun | Basundi | Kalakand |
| 1 | 2 | 2 | 2 | 1 | 4 | 1 |
| 2 | 2 | 2 | 1 | 1 | 6 | 1 |
| 3 | 2 | 1 | 1 | 1 | 2 | 1 |
| 4 | 1 | 1 | 1 | 1 | 2 | 1 |
| 5 | 3 | 1 | 1 | 1 | 3 | 0 |
| 6 | 4 | 1 | 1 | 1 | 2 | 1 |
| 7 | 2 | 2 | 2 | 1 | 2 | 1 |
| 8 | 2 | 2 | 3 | 1 | 4 | 0 |
| 9 | 3 | 1 | 5 | 1 | 2 | 0 |
| 10 | 4 | 1 | 4 | 1 | 2 | 0 |
| Total | 25 | 14 | 21 | 10 | 29 | 6 |

4.10.1 Production Statistics of Khoa of Shirur Anantpal tehsil

For the present investigation 10 production units were randomly selected from Shirur Anantpal tehsils. The above table shows the daily, monthly and annually output in production units. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 1 kg per day whereas some of them are selling 4 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various

occasion always happen such as passing exam, child birth, new house, new job, marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats. As result about 50 to 55 per cent of milk produced is converting by the traditional sector (*halwais*) into variety of Indian milk products (Patil, 2002 and Gupta, 1972). The present investigation corroborates with that of Ghosh, *et al.*, (2002), they studied the market survey of Channa podo sold in Orissa.

Table, 4.68 Physicochemical properties of khoa marketed in Shirur Anantpal tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|--------------|-------|------|
| 1 | Moisture | 25.72 | 1.81 |
| 2 | Fat | 24.95 | 1.60 |
| 3 | Protein | 18.94 | 0.36 |
| 4. | Lactose | 26.93 | 0.73 |
| 5. | Ash | 3.63 | 0.04 |

4.10.7 Physicochemical properties of khoa marketed in Shirur Anantpal tehsil

The moisture content of *khoa* is presented above table. The results showed that the moisture content in *khoa* observed 25.72% However, Rudreshappa and De, (1971) reported 20-25%, Patel, et al., (1985) 25.54% moisture. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 24.95%. The values of fat content were lower than those of Patel, et al., (1985), they reported 32.38% fat. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. *Khoa* analyzed for lactose content. The lactose content observed 26.93% whereas Patel et al., (1985) reported 18.85% of lactose. *Khoa* analyzed for protein content. The protein content observed 18.94% whereas Patel et al., (1985) reported 16.30% of protein. The percentage of ash in *khoa* samples observed 3.63%. Patel, et al., (1985) also reported ash 2.92% in *khoa*. The present investigation corroborates with that of Pagote and Rao (2012) studied the physicochemical properties of *khoa jalebi* a unique product of central India. In this investigation they reported the lot of variations in composition of various samples collected from various *halwais*. Acharya, *et al.*

(2015). They studied the Gundpak, is a popular khoa based traditional milk product of Nepal. Twelve market samples of gundpak were collected from the different areas of Kathmandu valley. The physico-chemical, sensory and microbiological analyses of the samples were investigated. The commercial samples were not consistent in their chemical compositions. The moisture, fat, protein, carbohydrates and ash were varied from 10.1 to 21.2, 10.6 to 16.5, 16.8 to 30.3, 29.0 to 54.8, 2.4 to 3.7 percentages, respectively.

Table, 4.69 Physicochemical properties of peda marketed in Shirur Anantpal tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 18.78 | 0.26 |
| 2 | Fat | 18.19 | 0.31 |
| 3 | Protein | 14.84 | 0.22 |
| 4. | Total Sucrose | 45.88 | 0.77 |
| 5. | Ash | 2.47 | 0.14 |

4.10.8 Physicochemical properties of peda marketed in Shirur Anantpal tehsil

The moisture content of *peda* is presented above table. The results showed that the moisture content in *peda* ranged observed 18.78%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *peda* was 18.19%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 45.88%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Peda* also analyzed for protein content. The protein content observed 14.84%. The percentage of ash in *peda* samples observed 2.47%. Jha *et al.*, (2014) reported the proximate composition of *lal peda* 12.4% moisture, 16.7% lactose, 17.2% protein, 18.5% fat, 3% ash and 32.2% sucrose. Londhe and Pal (2008) reported moisture content in *peda* ranged from 12.01 (Dharwad *peda*) to 13.04% (Mathura *peda*), which is in close range with the current findings. Modha, *et al.*, standardized thabdi *peda* and they found thabdi *peda* to contain on an average

16.80 % fat, 17.48 % moisture, 11.25 % protein, 20.95 % lactose, 29.99 % sucrose, and 3.53 % ash.

Table, 4.70 Physicochemical properties of burfi marketed in Shirur Anantpal tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 17.20 | 0.04 |
| 2 | Fat | 20.69 | 0.39 |
| 3 | Protein | 14.87 | 0.24 |
| 4. | Total Sucrose | 44.17 | 0.56 |
| 5. | Ash | 3.12 | 0.04 |

4.10.9 Physicochemical properties of burfi marketed in Shirur Anantpal tehsil

The moisture content of burfi is presented above table. The results showed that the moisture content in burfi observed 17.20%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of burfi was 20.69%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 44.17%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. burfi *also* analyzed for protein content. The protein content observed 14.87%. The percentage of ash in burfi samples observed 3.12%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.71 Physicochemical properties of Gulabjamun marketed in Shirur Anantpal tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 30.63 | 0.78 |
| 2 | Fat | 9.31 | 0.54 |
| 3 | Protein | 8.53 | 0.44 |
| 4. | Total Sucrose | 50.71 | 0.57 |

| | | | |
|----|-----|------|------|
| 5. | Ash | 1.64 | 0.07 |
|----|-----|------|------|

4.10.10 Physicochemical properties of gulabjamun marketed in Shirur Anantpal tehsil

The moisture content of *gulabjamun* is presented above table. The results showed that the moisture content in *gulabjamun* observed 30.63%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *gulabjamun* was 9.31%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 50.71%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *gulabjamun* also analyzed for protein content. The protein content observed 8.53%. The percentage of ash in *gulabjamun* samples observed 1.64%. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Yewale and Rao (2012) studied the standardization of reported the average gross chemical composition of the Khoa powder gulabjamun mix as moisture 9.43, fat 18.94, protein 14.03, ash 3.97 and total carbohydrates (by difference) 53.63%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.72 Physicochemical properties of Basundi marketed in Shirur Anantpal tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 50.35 | 1.13 |
| 2 | Fat | 12.86 | 0.38 |
| 3 | Protein | 10.53 | 0.32 |
| 4. | Total Sucrose | 24.96 | 1.60 |
| 5. | Ash | 1.73 | 0.04 |

4.10.11 Physicochemical properties of Basundi marketed in Shirur Anantpal tehsil

The moisture content of *basundi* is presented above table. The results showed that the moisture content in *basundi* observed 50.35%. This variation could be attributed to uncontrolled heating and concentration of milk. However, values of such product were lower than those of De, (1980) and Patel and Upadhyay, (2004a). The fat content of *basundi* was observed 12.86%. The values of fat content were higher than those of Patel and Upadhyay, (2004a) and Dharaiya, *et al.*, (2010). The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 24.96%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Basundi* analyzed for protein content. The protein content observed 10.53%. The percentage of ash in *basundi* samples observed 1.73%. Patel and Upadhyay, (2001) also reported variations in chemical quality of *basundi* sold in Gujarat state. Gaikwad and Hembade (2012) also reported the moisture percentage 27.71±2.18% protein content 12.99%, fat ranged between 14.83-22.14% whereas the average fat, 17.12±3.39%, sucrose 33.23±5.45%, ash 1.95±0.12%.

Table, 4.73 Physicochemical properties of Kalakand marketed in Shirur Anantpal tehsil

| Sr. no. | Constituents | Mean | SD |
|---------|---------------|-------|------|
| 1 | Moisture | 26.88 | 0.87 |
| 2 | Fat | 20.97 | 0.42 |
| 3 | Protein | 18.78 | 0.44 |
| 4. | Total Sucrose | 29.44 | 0.11 |
| 5. | Ash | 2.74 | 0.05 |

4.10.12 Physicochemical properties of kalakand marketed in Shirur Anantpal tehsil

The moisture content of *kalakand* is presented above table. The results showed that the moisture content in *kalakand* observed 26.88%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *kalakand* was 20.97%. The initial fat content in milk and higher level of

concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose content observed 29.44%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *kalakand* also analyzed for protein content. The protein content observed 18.78%. The percentage of ash in *kalakand* samples observed 2.74%. Singh and Gopal (2006) reported fat (16.04%), protein (14.19%), sucrose (35.46%) and ash (1.53%) in *kalakand*. Kamble, *et al.*, (2010) also reported chemical composition of burfi as moisture 16.85%, fat 21.95%, protein 14.91%, and ash 3.02%. Navle, *et al.*, (2014) also reported chemical composition of burfi as moisture 16.96%, fat 20.41%, protein 14.88%, sucrose 44.77% and ash 2.98%.

Table, 4.74 Educational changes of sweetmeat sellers of Shirur Anantpal tehsil

| Owner | Education of founder member | Education of first generation | Education of current generation |
|-------|-----------------------------|-------------------------------|---------------------------------|
| 1 | Nil | Nil | Graduate |
| 2 | Nil | Nil | Post Graduate |
| 3 | Nil | 10 th | Post graduate |
| 4 | Nil | 12 th | Graduate |
| 5 | Nil | 10 th | Teacher |
| 6 | 4 th | Graduation | Post graduate |
| 7 | Nil | 10 th | B.A. S.Y. |
| 8 | Nil | 12 th | Agri diploma |
| 9 | Nil | Graduation | Graduate |
| 10 | Nil | 12 th | 12 th |

4.10.13 Educational changes of sweetmeat sellers of Shirur Anantpal tehsil

Education is one of the most important determinants of a person's social status. Table, 4.39 shows the educational changes of sweetmeat sellers of Shirur Anantpal district. From the table it is observed that the 90% of members were illiterate when they had started their business. And only 10% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is

observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, post graduate and agriculture diploma holders.

Table, 4.75. Socioeconomic profile of the respondents in Shirur Anantpal tehsil (N=10)

| Sr. No. | Factors | Number of respondents | | |
|---------|-----------------------------|-----------------------|------------|--|
| | | Number | Percentage | |
| 1. | Age (in years) | | | |
| | Below 25 | 0 | 0 | |
| | 26-35 | 2 | 20 | |
| | 36-45 | 6 | 60 | |
| | Above 46 | 2 | 20 | |
| 2. | Monthly income level | | | |
| | Below 5000 | 5 | 50 | |
| | 5001-10000 | 3 | 30 | |
| | 10001-15000 | 1 | 10 | |
| | Above 15000 | 1 | 10 | |

4.10.14 Socioeconomic profile of the respondents in Shirur Anantpal tehsil

Education is one of the most important determinants of a person's social status. The table, 4.140 shows that no respondents observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 6-35 only 4 were observed and between 36-45 eight respondents were observed. Monthly income from sale of milk product was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. The reason might be due to low keeping animals, problem of water, availability of land etc. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

Chapter 5
Summary and conclusion

5.1 Socio-economical status, chemical analysis of milk products collected from Latur tehsil

5.1.1 Production Statistics of Khoa of Latur tehsil

For the present investigation 10 production units were randomly selected from Latur tehsils. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 8 kg per day whereas some of them are selling 20 kg per day. The production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals. Somebody stated that there are 365 days in a year but India has 366 festivals. Round the year various occasion always happen such as passing exam, child birth, new house, new job, marriage ceremony, birthday, promotion etc, hence by keeping in mind such scope and opportunity to the indigenous dairy products sweetmeat makers (*halwais*) prepare various delicious sweetmeats.

5.1.2 Physicochemical properties of khoa marketed in Latur tehsil

The results showed that the moisture content in *khoa* observed 25.06%. The fat content of *khoa* was 25.7%. *Khoa* analyzed for lactose content. *Khoa* analyzed for protein content. The protein content observed 19.27.05%. The percentage of ash in *khoa* samples observed 2.32%.

5.1.3 Physicochemical properties of peda marketed in Latur tehsil

The results showed that the moisture content in *peda* observed 18.71%. This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *peda* was 17.90%. The initial fat content in milk and higher level of concentration might be responsible for higher fat values present in final product. Sucrose content was observed greatly vary from sample to sample. The sucrose

content observed 46.38%. Higher sugar might be used by manufacturers for getting higher profit or higher sugar might be profound by consumers. *Peda* also analyzed for protein content. The protein content observed 14.62%.

5.1.4 Educational changes of sweetmeat sellers of Latur tehsil

The educational changes of sweetmeat sellers of Latur district. From the table it is observed that the 90% of members were illiterate when they had started their business. And only 10% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

5.1.5 Socioeconomic profile of the respondents in Latur tehsil

Education is one of the most important determinants of a person's social status. very few respondents observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 6-35 only 4 were observed and between 36-45 eight respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. Monthly income is totally depends on how many milch animals is to be reared. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. After this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

5.2 Socio-economical status, chemical analysis of milk products collected from Udgir tehsil

5.2.1 Production Statistics of Khoa of Udgir tehsil

For the present investigation 10 production units were randomly selected from Udgir tehsils. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various

producers. Some of them are selling the product 4 kg per day whereas some of them are selling 18 kg per day.

5.2.2 Physicochemical properties of khoa marketed in Udgir tehsil

The results showed that the moisture content in *khoa* observed 25.10. The fat content of *khoa* was 25.63%. *Khoa* analyzed for lactose content. The lactose content observed 25.80%. *Khoa* analyzed for protein content. The protein content observed 19.87% . The percentage of ash in *khoa* samples observed 3.70%.

5.2.3 Educational changes of sweetmeat sellers of Udgir tehsil

The educational changes of sweetmeat sellers of Udgir district. From the table it is observed that the 70% of members were illiterate when they had started their business. And only 30% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

5.2.4 Socioeconomic profile of the respondents in Udgir tehsil

Education is one of the most important determinants of a person's social status. The highest number of respondents observed in above age level 46. However between age 26-35 only 3 were observed and between 36-45 seven respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month.

5.3 Socio-economical status, chemical analysis of milk products collected from Ahmedpur tehsil

5.3.1 Production Statistics of Khoa of Ahmedpur tehsil

For the present investigation 10 production units were randomly selected from Ahmedpur tehsils. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product

by various producers. Some of them are selling the product 6 kg per day whereas some of them are selling 11 kg per day.

5.3.2 Physicochemical properties of khoa marketed in Ahmedpur tehsil

The results showed that the moisture content in *khoa* observed 24.69%. The fat content of *khoa* was 26.03%. The lactose content observed 26.44% whereas. *Khoa* analyzed for protein content. The protein content observed 19.14%. The percentage of ash in *khoa* samples observed 3.70%.

5.3.3 Educational changes of sweetmeat sellers of Ahmedpur tehsil

The investigation shows the educational changes of sweetmeat sellers of Ahmedpur district. From the table it is observed that the 70% of members were illiterate when they had started their business. And only 30% of members were literate.

5.3.4 Socioeconomic profile of the respondents in Ahmedpur tehsil

The investigation shows that no any single respondents observed below the age of 25. Education is one of the most important determinants of a person's social status. The highest number of respondents observed in above age level 46. However between age 26-35 only 1 was observed and between 36-45 2 respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

5.4 Socio-economical status, chemical analysis of milk products collected from Nilanga tehsil

5.4.1 Production Statistics of Khoa of Nilanga tehsil

For the present investigation 10 production units were randomly selected from Nilanga tehsils. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product

by various producers. Some of them are selling the product 2 kg per day whereas some of them are selling 14 kg per day.

5.4.2 Physicochemical properties of khoa marketed in Nilanga tehsil

The results showed that the moisture content in *khoa* observed 24.68%. The fat content of *khoa* was 26.06%. The lactose content observed 26.60%. The protein content observed 19.10%. The percentage of ash in *khoa* samples observed 3.65%.

5.4.3 Educational changes of sweetmeat sellers of Nilanga tehsil

Table, 4.55 shows the educational changes of sweetmeat sellers of Nilanga district. it is observed that the 90% of members were illiterate when they had started their business. And only 10% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, and agriculture degree holders.

5.4.4 Socioeconomic profile of the respondents in Nilanga tehsil

Education is one of the most important determinants of a person's social status. The table, 4.56 nobody observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 26-35 only 1 were observed and between 36-45 four respondents were observed.

5.5 Socio-economical status, chemical analysis of milk products collected from Deoni tehsil

5.5.1 Production Statistics of Khoa of Deoni tehsil

For the present investigation 10 production units were randomly selected from Deoni tehsils. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 2 kg per day whereas some of them are selling 6 kg per day.

5.5.2 Physicochemical properties of khoa marketed in Deoni tehsil

The results showed that the moisture content in *khoa* observed 24.12. The fat content of *khoa* was 26.05%. The sucrose content observed 26.47%. *Khoa* analyzed for protein content. The protein content observed 19.47%.

5.5.3 Educational changes of sweetmeat sellers of Deoni tehsil

it is observed that the 100% of members were illiterate when they had started their business. Due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

5.5.4 Socioeconomic profile of the respondents in Deoni tehsil

The highest number of respondents observed in above age level 46. However between age 26-35 only 3 were observed and between 36-45 two respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

5.6 Socio-economical status, chemical analysis of milk products collected from Jalkot tehsil

5.6.1 Production Statistics of Khoa of Jalkot tehsil

It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 1 kg per day whereas some of them are selling 8 kg per day.

5.6.2 Physicochemical properties of khoa marketed in Jalkot tehsil

The results showed that the moisture content in *khoa* observed 26.04%. The fat content of *khoa* was 25.03%. The lactose content observed 26.41%. *Khoa* analyzed for protein content. The percentage of ash in *khoa* samples observed 3.63%.

5.6.3 Educational changes of sweetmeat sellers of Jalkot tehsil

The 80% of members were illiterate when they had started their business. And only 20% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

5.6.4 Socioeconomic profile of the respondents in Jalkot tehsil

Education is one of the most important determinants of a person's social status. Very few respondents observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 6-35 only 4 were observed and between 36-45 eight respondents were observed. Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month.

5.7 Socio-economical status, chemical analysis of milk products collected from Renapur tehsil

5.7.1 Production Statistics of Khoa of Renapur tehsil

For the present investigation 10 production units were randomly selected from Renapur tehsils. It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 4 kg per day whereas some of them are selling 10 kg per day.

5.7.2 Physicochemical properties of khoa marketed in Renapur tehsil

The results showed that the moisture content in *khoa* observed 25.46%. The fat content of *khoa* was 25.46%. The lactose content observed 26.36%. *Khoa*

analyzed for protein content. The protein content observed 19.33%. The percentage of ash in *khoa* samples observed 3.72%.

5.7.3 Educational changes of sweetmeat sellers of Renapur tehsil

It is observed that the 70% of members were illiterate when they had started their business. And only 30% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

5.7.4 Socioeconomic profile of the respondents in Renapur tehsil

The highest number of respondents observed in above age level 46. However between age 26-35 only 1 was observed and between 36-45 two respondents were observed. Monthly income from sale of milk product was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

5.8 Socio-economical status, chemical analysis of milk products collected from Ausa tehsil

5.8.1 Production Statistics of Khoa of Ausa tehsil

It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 4 kg per day whereas some of them are selling 9 kg per day.

5.8.2 Physicochemical properties of khoa marketed in Ausa tehsil

The results showed that the moisture content in *khoa* observed 25.40%. The fat content of *khoa* was 25.41%. *Khoa* analyzed for lactose content. The lactose

content observed 26.56% whereas The protein content observed 19.11%. The percentage of ash in *khoa* samples observed 3.53%.

5.8.3 Educational changes of sweetmeat sellers of Ausa tehsil

it is observed that the 100% of members were illiterate when they had started their business. But due to poor economical condition they have to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

5.8.4 Socioeconomic profile of the respondents in Ausa tehsil

The highest number of respondents observed in above age level 46. However between age 26-35 only 1 was observed and between 36-45 two respondents were observed. Monthly income from sale of milk product was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

5.9 Socio-economical status, chemical analysis of milk products collected from Chakur tehsil

5.9.1 Production Statistics of Khoa of Chakur tehsil

For the present investigation 10 production units were randomly selected from Chakur tehsils. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 2 kg per day whereas some of them are selling 8 kg per day.

5.9.2 Physicochemical properties of khoa marketed in Chakur tehsil

The results showed that the moisture content in *khoa* observed 25.40%. The fat content of *khoa* was 25.37%. The lactose content observed 26.60%. The protein content observed 18.96% The percentage of ash in *khoa* samples observed 2.32%.

5.9.3 Educational changes of sweetmeat sellers of Chakur tehsil

it is observed that the 90% of members were illiterate when they had started their business. And only 10% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

5.9.4 Socioeconomic profile of the respondents in Chakur tehsil

Education is one of the most important determinants of a person's social status. Nobody observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 26-35 only 1 was observed and between 36-45 two respondents were observed. Monthly income from sale of milk product was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month. The table shows that the maximum (16) respondents fall in the range of below 5000 rupees per month. after this the income between the range of 5001-10000 rupees only 6 respondents were observed however between the income range 10001-15000 and above only 2 and 1 respondents were observed respectively.

5.10 Socio-economical status, chemical analysis of milk products collected from Shirur Anantpal tehsil

5.10.1 Production Statistics of Khoa of Shirur Anantpal tehsil

It also shows the annually value of output. In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 1 kg per day whereas some of them are selling 4 kg per day.

5.10.2 Physicochemical properties of khoa marketed in Shirur Anantpal tehsil

The results showed that the moisture content in *khoa* observed 25.72% . This variation could be attributed to uncontrolled heating and concentration of milk. The fat content of *khoa* was 24.95%. The lactose content observed 26.93%. *Khoa*

analyzed for protein content. The protein content observed 18.94% The percentage of ash in *khoa* samples observed 3.63%.

5.10.3 Educational changes of sweetmeat sellers of Shirur Anantpal tehsil

Education is one of the most important determinants of a person's social status. It is observed that the 90% of members were illiterate when they had started their business. And only 10% of members were literate. But due to poor economical condition they had to stop their education. In this way they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, post graduate and agriculture diploma holders.

5.10.4 Socioeconomic profile of the respondents in Shirur Anantpal tehsil

The highest number of respondents observed in above age level 46. However between age 6-35 only 4 were observed and between 36-45 eight respondents were observed. Monthly income from sale of milk product was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month.

Conclusions

From the present investigation it is concluded that the production level of the product varies with increasing in demand in festivals throughout the year i.e. the production level increases in Deewali, Rakshabandhan, and various festivals.

In the present investigation a lot of variations are observed in the production and selling of product by various producers. Some of them are selling the product 1 kg per day whereas some of them are selling 20 kg per day.

Gulabjamun mix is available in market therefore it became very easy for every house hold to prepare this product at home therefore this product is sold in very low quantity in the market.

Khoa is the base product of many sweetmeat therefore it has tremendous scope for selling round the year.

Basundi is the popular concentrated milk product of this region therefore it is sold in huge quantity all over the district especially in AUSA tehsil.

Due to poor economical condition the sweet meat sellers have to stop their education and they entered into the sweetmeat business. From the present investigation it is observed that the founder members were illiterate but they educated their wards. Some wards of founder numbers are graduated, post graduate and some of them are teacher, doctor and agriculture degree holders.

Education is one of the most important determinants of a person's social status. The result shows that very few respondents observed below the age of 25. The highest number of respondents observed in above age level 46. However between age 26-35 only few were observed.

Monthly income from sale of milk was used as an indicator for estimating the income generation. Monthly income refers to the gross income earned by a family from sale of milk product in one month.

The present investigation shows that the maximum fall in the range of below 5000 rupees per month. After this the income between the range of 5001-10000 rupees only few respondents were observed however between the income range 10001-15000 and above very few respondents were observed respectively.

Chapter 6
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