REVIEW OF LITERATURE

Milk adulteration is a significant problem in all developing countries and third world nations. There have been reports of adulteration from all parts of India. Recently, a report indicated that 25% of the milk samples tested in Maharashtra (India) did not comply with the standards set by the Food Safety Standards Authority of India (FSSAI). The samples were found laced with sugar, oil and milk powder.

Roy *et al.,* (2017) conducted a qualitative analysis to study the presence of adulterants in milk supplied to Delhi and adjoining regions. A comparative analysis was carried out for the extent of different adulterants present in both packaged and locally available milk samples. Seventy five milk samples were tested for the presence of neutralizers, skimmed milk powder, urea, detergent and ammonium sulphate. Most milk samples collected from Delhi and adjoining regions tested positive for neutralizers and skimmed milk powder. In addition, some samples also tested positive for detergent, urea and ammonium sulphate. Considerable number of unpackaged milk samples showed presence of ammonium sulphate and detergents compared to packaged ones. Surprisingly, urea was present only in packaged samples.

Swathi and Kauser (2015) reported in their study conducted in and around the campus of Osmania University College for women, Koti, Hyderabad that the collected milk and milk products samples were adulterated with common adulterants like water, urea, detergent and starch, water being the most common adulterant, the milk samples collected were found containing excess water, starch and detergent.

Singuluri and Sukumaran (2014) conducted a qualitative analyses on 50 milk samples and observed that the sucrose and skim milk powder were present in 22% and 80% of the milk samples respectively. Urea, neutralizers and salt were present in 60%, 26% and

82% of the milk samples respectively. Formalin, detergents and hydrogen peroxide were present in 32%, 44%, and 32% of the milk samples obtained. All percentage values are indicative of presence of these adulterants (trace, moderate and high amounts combined). This qualitative analysis which has unfolded proved that the milk procured did not conform to the legal standards and was adulterated with toxic chemicals which are injurious to health.

A study in Dehradun by Nirwal *et al.,* (2003) with 100 milk samples for adulteration for its physical apperance shows that 90 % milk samples were white in color and 10 % were yellowish white and pH ranged between 6.7 – 6.9. Analysis of milk quality showed that 15 milk samples were of very poor quality, 73 samples were of fair quality, 10 were good and only 02 samples were of very good quality. Out of 100 milk samples analyzed for adulteration, adulterants found were glucose (80%), skim milk powder (58%), salt (51%) and urea (35%) while those found negative was for formalin, salicylic acid, boric acid, starch, soap and ammonium sulphate. All the samples were free from mastitis infection.

Islam *et al.,*(2003) analyzed the quality of milk at local markets of Muktagacha Upazila in Mymensingh district of Bangladesh. Organopleptic and chemical parameters for the quality of milk were analysed. Adulteration test done for starch and formalin were found to be negative. There was no adulteration in the milk samples, though there was fluctuation in chemical parameters (fat, protein, ash, and lactose) regarding the standard value.

Singh *et al.,* (2014) conducted a study on "Detection of common adulterants in milk from Delhi and NCR". Thirty milk samples, both open and branded were qualitatively analyzed for adulteration. These samples were tested for alkalinity, neutralizers, skimmed milk powder (SMP) and presence of various sugars. All the samples were found to be alkaline showing various degree of alkalinity. In addition, cane sugar and maltose were also present in all the samples. Among these, 73.3% tested positive for neutralizer and 10% for SMP. However, glucose and starch were absent in all the samples.

Kumar *et al.,* (2015) conducted a study on status of milk adulterants in the district of Varanasi. Fifty milk samples were collected from Godaulia and Pandeypur milk mandi of Varanasi district. A standard milk adulteration kit manufactured by HIMEDIA laboratories, Mumbai (India) was used for present study. The milk samples were tested for adulterants used and these were grouped in three classes i.e. Group I: starch, sucrose, glucose and skim milk powder, Group II: acidity/alkalinity, neutralizers, sodium chloride and urea; Group III: formalin, hydrogen Peroxide and detergents. Under group one, all the samples tested were found negative for glucose, while 20% samples were positive for starch. In second group, 80% of the samples tested were found positive for acidity/alkalinity. In these samples the extent of adulteration with neutralizers, sodium chloride and urea were 28%, 80% and 60%, respectively. In third group, 30% of milk samples were positive for formalin and 36% for hydrogen peroxide. Similarly, 44% of milk samples were positive for detergents. Peroxide and formalin were generally used to enhance shelf life of milk. Detergents found may be due to low maintenance of milk tanks. The results of this investigation confirms that milk marketed for public consumption is produced and handled under neglected sanitary measures.

Mishra *et al.,* (1977) observed that the milk sample analysed from Bhubaneshwar city was found to be positive for sodium bicarbonate. They also observed that 15.74 % of the sample from local milkman were positive for this neutralizer and about 10.58 % of the milk sample collected from local shops were positive for this preservatives. They further reported that 9.67 % of the pasteurized milk samples to be positive for sodium bicarbonate as preservatives.

Purpose of the study:

Though adulteration of milk and its products are banned yet the practice is still continuing causing deleterious effect on human health. Considering the ill effects and threats of adulteration of milk on human health it was thought of undertaking this study to identify the type of adulterants used by the local vendors of in and around Guwahati city.

Objectives of the study:.

1. To identify the adulterants present in milk samples in and around Guwahati city.