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Chemical composition, traditional and modern uses of milk of different mammalian species-a review

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ABSTRACT

Humans utilize milk as important component of food, and also use of milk as a base in many activities which are productive for humans. Food contains all materials which fulfill all basic requirements to satisfy all factors related to nutrition and utilized by the humans after applying many of modifications through adopting different methods for preparation or treating the food items with heat. Milk contains protein contents such as casein which proved as determinant content for yielding the cheese product and reflects the correlation of both traits positively. Milk is composed of many organic compounds including fat contents, protein, carbohydrates like lactose, components of ash, water molecules and all solids particles. Milk of different mammalian species is used to treat various diseases i.e. common cold, hepatitis B and C, pain, migraine headache, sexual power, wound, diabetes, boost immune system, gives fair complexion, eye, cough, whooping cough, catarrh, invigorative, jaundice, skin burn and crack, hiccup, red eyes, type I diabetes, ulcerative colitis, crohn's disease, arthritis, burn, muscular, pain, male power and gastritis. Milk off mammals (i.e. cow, buffalo, goat and human) is used in modern scientific technology to treat various diseases as; antibacterial, newborn baby, HCV, diabetic, cancer, malabsorption disorders, inflammatory bowel disease, immunomodulatory activity, anticarcinogenic, antioxidant, mucosal infections, eyes infection, diaper dermatitis, neonatal conjunctivitis and antibacterial effect. Moreover, present information related to milk usage could provide services not only as nutrients sources but as important source of biologically active agents having properties of therapeutic use. Present study provides evidences about the milk contents used in therapy process and revealed the efforts to detect constituent of therapy more accurately.

Keywords: Human breast milk, Food, Therapeutic use, Camel milk, Nutrition

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INTRODUCTION

Humans utilize milk as important component of food (Wiley, 2015). Milk declared most of essential and worthy material because of its benefits and humans selected milk as a basic component for making dairy product from long time. Beside acceptance of its importance, it is announced as oldest food item to be

used. Food contains all materials which fulfill all basic requirements to satisfy all factors related to nutrition and utilized by the humans after applying many of modifications through adopting different methods for preparation or treating the food items with heat. Many of other ways adopted to intake food by drinking or many of other methods (Spreer, 1998).

Milk composed of many essential components including proteins and also lipids, which impart much strong impact on different important properties of the milk such as technological and nutritional properties (Bauman *et al.*, 2006). Milk contain protein contents such as casein which proved as determinant content for yielding the cheese product and reflect the correlation of both traits positively (Remeuf and Hurtaud, 1991). Same like protein, contents of organic fat and its composition considered most important factors for milk and its derivative cheese characteristic determination. Due to this factor, milk composed of fats in low percentage will capable to give reduced amount of cheese and provide less satisfaction to the farmers because of low quality color and flavor (Lamberet *et al.*, 2000). One of form of lipid is fatty acids composed of short chain, like C4:0-C12:0 involved in providing milk with foaming sour texture, moreover unsaturated fatty acid of the fats is highly determinant factor of melting point and hardness properties (Fox and McSweeney, 2007). Most important point is considerable which is related to smattering of fat content of milk of goat (approximately 70%), because milk of goat composed of saturated fatty acid which provide determinant impacts on humans related to health, as saturated fatty acid caused chances of cardiovascular disorders. Most valued description is that protein of milk is hydrolysed to provide wide range of peptides which are biologically active, that might impart beneficial impacts for human related health, including abnormal low blood pressure, antimicrobial, immunity producing, antioxidative and antithrombic activities (Fitzgerald and Meisel, 2003), (ii) increase property to absorb mineral (Meisel, 1998), and (iii) properties related to antitumor (Matar *et al.*, 2003).

CHEMICAL COMPOSITION OF MILK

Milk is composed of many organic compounds including fat contents, protein, carbohydrates like lactose, components of ash, water molecules and all solids particles (Table 1). Purpose of this study was to find out milk producing cow's chemical and physical properties in area of Egypt. Combined samples were obtained from cow and buffalo, twelve farm houses were selected in Qena and milk samples were collected from them. Milk samples collected and then milk quality was checked by estimating some physical parameters such as specific gravity of milk. Milk samples were also assessed to check minerals and fatty acids which involve in the composition of the milk fat. Physical parameter involved specific gravity give same result for milk's quality of both selected cow and buffalo. Buffalo milk contain rich contents of organic fat, organic protein, solid particles and ash (Hamad and Baiomy, 2010).

Study showed that Brazil is country in which milk of sheep have more Importance and third number in list as most used product. Sheep milk has higher status of nutrition which provides it appreciated quality. Milk of sheep imparts

positive impacts on the children who have some issues with milk of cow. Sheep of South Brazil gives small portion of awareness about physical, chemical and microbes relating composition of milk. So, main purpose of conduction of this study was to evaluate characteristics of milk of sheep related to microbial and chemical properties in two selected rural areas of south Brazil. Analysis of sheep's milk showed chemical composition, that was 17.32 g/100 g total solids, 5.86 g/100 g total protein, 4.46 g/100 g casein, 1.08 g/100 g whey protein, 7.28 g/100 g fat, 0.93 g/100 g ash, and 3.41 g/100 g lactose. High somatic cell count (1.7x106 cells/mL), total mesophilic bacterias (16.0x106 CFU/mL) and psychrotrophics (5.8x106 CFU/mL) were observed. Hundred percent of samples showed growth of enterobacteria, Staphylococcus aureus and coliform, while forty five percent of sheep's milk samples exhibit *E. coli* growth rate (Merlin Junior *et al.*, 2015).

Milk of goat possesses nutrients which are proved beneficial for human health, especially for those individuals who have issue to digest the lactose present in the milk and for those whose body system show sensitivity against milk of other animals. Moreover, cultural faith produced hurdles against the benefits of the goat milk usage and also against the developing stages of the dairy sectors, most important in the countries which are taking steps toward the development. Awareness related to the nature of the milk of goat is very essential for making investigation about utilization of the milk of the goat for the human beings. Like that, milk of goat also has its benefits in therapy procedures for treatment of many problems such as vomiting sensation, disturbance in gastrointestinal tract, constipation, colic, diarrhea and many other issues related to respiratory system (Getaneh *et al.*, 2016).

The contents present in the milk of human present beneficial composition for the best nutrition for the infants. Milk of human has different molecules which are active in the field of biology and range in numbers from hundreds to thousands. These bioactive molecules provide protection for many of microbial infections and swelling, these molecules also play important role in maturing process of body immunity, developing different body organs and developing healthy colony of microbes. Many of bioactive molecules are present but some of them are analysed as important agents used in the process of therapy. Most energetic and biologically active liquid is human milk which has changed composition as compared to colostrums to late breast milking process, and composition is different with different range of feeds, day to day and also different between milk of different mothers. Proving milk to the infants as feed with help of human milk source is continuously increasing day by day. Milk provided by donor apply pasteurization and given to infants and their mothers at high risk in U.S region. Pasteurized milk applied to process of freezing in area of milking cows which will be capable of use in the future for the feeding of infants. There are some proteins present in milk which are treated by heat for protein degradation and then freeze the milk by different cycles. Treated milk may not possess any type of microbial activities after providing these treatments to make milk pasteurized. Present study exhibit the overview related to human milk

composition, different sources which cause different changes in properties, and relevance on base of clinic procedures (Ballard and Morrow, 2013).

Present study provide analyses about the variations in the chemical composition, distributional proportion of nitrogen element, and amino acids present in samples collected from the milk during milking process, this process of milking applied on the donkey breed in area of Northwest china. Obtained results provide information related to donkey milk, which shows that milk of donkey contain 9.53% total solids, 1.57% protein, 1.16% fat, 6.33% lactose, and 0.4% ash as average scale, this composition shows more resemblance to milk of human and mare than to other mammalian milk. By noticing the analyses carried out for milking process, it is observed that density and pH remained constant, contents of ash and protein present in the milk exhibit opposite proportion, contents of fat in the milk showed changes at large scale, and these changes in different contents and percentage related to amino acid, casein protein and whey protein were small. There is presentation of ratio fifty two: thirty seven for casein protein to whey, which gives the less values of milk of humans and represents the more value for milk of cow. Chemical composition of donkey milk showed that sodium dodecyl sulfate is present in milk which elaborates that milk of donkey carries high contents of beta-lactoglobin protein and also contain lysozyme enzyme. There are eight amino acids present in milk which are essential amino acid in nature. Percentage of essential amino acid was as follows 38.2%, which is higher in percentage than milk of cow and mare; there is high level of serine in the milk of donkey, which is 6.2%, glutamic acid (22.8%), arginine (4.6%), and valine (6.5%) and a lower level of cystine (0.4%) (Guo *et al.*, 2007).

Highly negative effect on the business community is observed because of present crises in business of dairy products in Pakistan. Business communities are taking more interest on the composition of milk; more concentration is on the composition of the milk of buffalo, because buffalo milk took great part in the production of milk at national rate. Production rate is sixty three percent approximately according to data which was published by the FAQ in 2010. It is more essential to have knowledge about addition value in food chain of dairy at maximum level, content of milk are important nutrients which decides the value of milk diet for utilization of human. It is also helpful in determining the different market categories for different classes of individuals who make use of milk like children in growing age, mothers feeding their young ones, individual in young age which perform difficult activities or individual in elder age. Many animals are used for milking process but buffalo is considered most important source of deriving milk for human beings in many part of the world involving Pakistan. Buffalo milk is carrying higher concentration of solid particles for imparting rich sources of organic compounds to humans including protein, lipids, disaccharides and many other essential minerals. Milk of buffalo has its importance because of chemical composition from long time, which provides detrimental properties related to its nutrients and its properties which enhance its suitability in formation of different traditional values and also its high value in industry of dairy products. In present era milk of buffalo attain more attention because of its contents, nutritional composition and biological active properties. Study pays more

emphasis on the physical and chemical composing properties of the buffalo milk, which pay more attention on the lipids, important minerals, essential protein, biological enzymes and all essential vitamins present in the milk. Milk of buffalo exhibited different concentration and fractions of all major elements, which are exhibiting different phase. Enzymes related to the digestion of the buffalo milk reflected its suitability for many of essential process and obtaining different end products. All technologies used for the process of getting milk through machines to all process on industrial scales require many of modifications to enhance the progressive steps for developmental. Buffalo milking considered most important and provide opportunities for people who are going to invest in dairy field and get more advantages from government by adopting this business as initiative during present time period (Ahmad *et al.*, 2013).

This study involves the important role of milk of camel in the diet of human being. Milk of camel showed different properties from many other animals which are ruminant in nature. Milk of camel have low sugar and cholesterol contents but high contents of minerals and also rich in vitamin C and also have high concentration of protein which is functionally protective, including lactoperoxidase, lysozyme, lectoferrin and immunoglobin. Meat of camel is considered as source of energy and is considered essential part of food in any of festivals. Male camel has capability to carry burden, so utilized in transporting different items like water and many other households during migration of different families from one place to another place where grazing sites are easy to access. Moreover camels are also used for performing many other tasks but one of their uses is to fulfill relations according to traditions, like in dowry or to settle down the disputes as compensation of the parties who get injured. One of unique term of milk of camel is that it possesses many of qualities, as milk act as antioxidative, antifungal, anti arthritis, antibacterial, antiviral and antifungal. All these properties are beneficial in treating tuberculosis, prevent over aging, and also used in providing well developed immune system to body and used in the formation of cosmetics. Beta-lactoglobulin is not present in milk of camel and easily digested by the individual who has issue of digesting cow milk due to problem with the lactose sugar present in cow milk. Milk of camel also contains insulin, which provide safe results and more efficient in providing improved control on glycemic condition for long term in person who is suffering from diabetes. Milk of camel is used to treat autism in the children and totally reduced the related symptoms. Milk of camel has lactoferrin as content which prevent the risk of cancer in body because it reduces the proliferation of cells which are dividing to produce cancer due to some mutations. Milk of camel contains magnesium and zinc which stops antiulcer signs. Milk derived from camel has high concentration of alpha-hydroxyl acid, that is helpful in making smooth skin and also consumed in treatment of different disorders related to skin such as acne problem, dermatitis and eczema condition. Even presence of valued attributes of camel milk its use is only limited to rural areas and restricted its use on large scale. More studies should be taken on chemical and medicinal properties, which elaborate the importance of camel milk and its use must be enhanced on large scale (Abdullahi, 2019).

Table 1: The chemical composition of milk of mammalian species (average percentage).

Mammal	Fats	Proteins	Lactose	Ash	Total solids	Water	References
Cow	4.3	3.4	4.47	0.69	12.86	87.14	(Guo *et al.*, 2007; Hamad and Baiomy, 2010; Ballard and Morrow, 2013; Grădinaru *et al.*, 2015; Merlin Junior *et al.*, 2015; Getaneh *et al.*, 2016; Kula and Tegegne, 2016; Abdullahi, 2019)
Sheep	6.8	5.7	3.24	0.94	16.68	83.32	
Goat	4.8	3.7	5.0	0.85	14.35	85.65	
Woman	3.6	1.2	7.8	0.2	12.8	87.2	
Donkey	1.8	1.8	7.4	0.5	11.5	88.5	
Buffalo	7.8	4.2	5.0	0.77	17.77	82.23	
Bison	1.7	4.8	6.0	0.96	13.46	86.54	
Camel	5.4	3.9	3.3	0.9	13.5	86.5	

Table 2: Traditional uses of milk of various mammalian species.

Mammalian species	Traditional uses	References
Panthera tigris	Boost immune system and gives fair complexion, eye	(Mishra *et al.*, 2011; Yeshi *et al.*, 2017)
Equus asinus	Cough, whooping cough, catarrh, Invigorative, Common cold	(Benítez, 2011; Yirga *et al.*, 2011; Martínez, 2013; Alonso-Castro, 2014)
Bos taurus	Dark skin, measles, menorrhagia, body pain, skin cancer, tuberculosis	(Lev, 2003; Alves *et al.*, 2009; Alves *et al.*, 2012; Mootoosamy and Mahomoodally, 2014; Altaf *et al.*, 2017; Borah and Prasad, 2017; Altaf *et al.*, 2018)
Camelus dromedarius	Hepatitis B and C, pain, migraine headache	(Yirga *et al.*, 2011; Altaf *et al.*, 2017; Altaf *et al.*, 2018)
Capra aegagrus	Sexual power	(Altaf *et al.*, 2018)
Bubalus bubalis	Wound, diabetes, jaundice	(Vijayakumar *et al.*, 2015; Altaf *et al.*, 2017; Altaf *et al.*, 2018)
Ovis aries	Skin burn and crack	(Altaf *et al.*, 2017; Altaf *et al.*, 2018)
Homo sapiens	Hiccup, red eyes, type I diabetes, ulcerative colitis, and crohn's disease	(WHO, 2005; Padmanabhan and Sujana, 2008; Barros *et al.*, 2012; Haileselasie, 2012; Betlloch Mas *et al.*, 2014)
Equus caballus	Burn	(Lev, 2003)
Equus africanus	Arthritis	(Altaf *et al.*, 2017)
Capra hircus	Muscular pain, male power	(Haileselasie, 2012; Altaf *et al.*, 2017)
Muntiacus muntjac	Gastritis	(Lohani, 2011)

TRADITIONAL USES OF MILK

Milk of different mammalian species (i.e. *Panthera tigris, Equus asinus, Bos taurus, Camelus dromedaries, Capra aegagrus, Bubalus bubalis, Ovis aries, Homo sapiens, Equus caballus, Equus africanus, Capra hircus* and *Muntiacus*

muntjac) is used to treat various diseases i.e. boost immune system, gives fair complexion, eye, cough, whooping cough, catarrh, invigorative, common cold, hepatitis B and C, pain, migraine headache, sexual power, wound, diabetes, jaundice, skin burn and crack, hiccup, red eyes, type I diabetes, ulcerative colitis, crohn's disease, arthritis, burn, muscular, pain, male power and gastritis (Table 2).

MODERN USES OF MILK

Purpose of conduction of present study is to find out the activities against the bacterial growth which synthesized biologically nanoparticles of silver with diet, eco-friendly and less toxic material, such as milk, lysozyme and egg white of milk of cow to be used as raw product or to be pasteurized. The organisms which are selected are considered important clinically. In medicine field selected animals used in evaluation of in vitro process. Nanoparticles like AgNP were analyzed by visible spectroscopy of ultraviolet, that exhibit absorbing peak of Plasmon surface having range between four hundred to four hundred and fifty nano meters. Spectroscopy based on fourier infrared transformation exhibit presence of attributes of C=O and also bonds of O-H. Field of microscopy involves in electron transmission exhibit circular particles which have range between twenty and two hundred nano meters. AgNps presence is confirmed by the electron microscopy which showed 3keV. This analysis was against the control showing its role played during its formation. In comparison with electroscopy, all activities based on the antibacterial process were determined with help of diffusion method. Zones which are inhibited most effectively were obtained with already formed AgNps by milk pasteurization. Inhibited zones were proceeding against the *Escherichia coli* and *Bacillus subtilis*, proceeding against the *Pseudomonas alcaligenes* and *Staphylococcus aureus*, proceeding against the *Bacillus cereus*. Inhibitory process revealed the percentage with help of AgNps obtained from pasteurization of milk of cow was forty eight percent, fifty eight percent, about to sixty six percent, about to eighty six percent, and sixty eight percent against the period of growth of *E.coli*, *B. cereus*, *S. aureus, B. subtilis* and *P. alcaligenes,* which played more significant role when there made comparison of it with profiles of AgNps inhibition, which was derived from many other sources like lysozyme enzyme, milk in raw form and egg white sources (Athreya *et al.*, 2019).

Conducted research provide information related to the use of camel milk due to effect of antidiabetic properties, because milk of camel in induction of alloxan in diabetic dogs. Disease of diabetes was developed in the dog by injecting them with alloxan injection through intravenous way and diabetic effects were analyzed in the dogs by estimation of changes took place in the glycometabolic index, involve testing blood glucose during fasting, test for intravenous glucose tolerance, metabolic index for lipid profile, total number of proteins present and estimation of beta cells injury in pancreatic islets. Clear decrease in level of blood glucose during fasting and reduced level of cholesterol and protein was observed in samples and clinical based improvement was observed after treatment with milk of camel. One of important effect of milk of camel is to renew beta cells of pancreatic islets. On the bases of effects there is a

comparison made between beneficial effects of cow and camel milk, but cow milk failed to provide beneficial impact on diabetes induced by the alloxan in dogs of experiments (Sboui *et al.*, 2012).

Min purpose of this study was to evaluate the all possible effects of milk of camel related to antidiabetic property by inducing streptozotocin in the rats and made them diabetic and assess their parameter of kidney and liver on clinical bases. After giving the streptozotocin in the bodies of rats through different way exhibit the noticeable changes in the body. Experimental rats were given milk of camel for thirty days. Milk of camel milk impart different effects on different parameters including glucose level in blood, protein present in serum, level of urea, uric acid, level of creatinine, checking lipid profile in body and checking activities of different enzymes as diagnosis marker for functioning of liver and alkaline phosphatase level was detected in blood of control group and experimental based groups of rats. Rats suffering from diabetes provided with the milk of camel and checked reduced range of urea, glucose of blood, creatinine and uric acid. There is also significant increase in the globulin and albumin ratio which cause the restoration of all enzymes function as marker. Lipid profile was also observed which was very close to the control level. Study revealed that treatment with milk of camel has antihyperglycemic effects in the experimental group of rats and recover all damage in liver due to introduction of streotozocin (Khan *et al.*, 2013).

Some of studies which have been published demonstrated that milk of camel used in treating the infections in stomach, cancer and tuberculosis disease. Until now, less field of camel milk based study is conducted which showed milk beneficial effects on suicide of cells known as apoptosis and cancer in human due to oxidative stress. Study conducted recently exhibit the effects and applied mechanism of milk of camel on the division and growth of the cancer cells by using in vitro process by presenting model of hepatoma and cancer cells causing human breast cancer. Results of the study evaluated that milk of camel instead of milk of bovine cause inhibition of MCF6 and HepG2 dividing growth of cells by activating caspase-3 mRNA and also inhibit the activity of cancer cell and inducing receptors causing death in cell lines of both. Moreover milk of camel increase the expression of marker causing oxidative stress and formation of species of oxygen in reactive form in both cells. As milk of camel contain caspase-3 mRNA which performed function in complete blockage by help of transcriptional inhibitor and implication of actinomycin D present in camel milk enhance the synthesis of de nono RNA. Moreover mutagen inhibition causes activation of kinases of protein which modulate differentially level of caspase-3 mRNA present in milk of camel. (Korashy *et al.*, 2012).

Milk has iron binding protein which is primary in functioning is named as Lactoferrin, which perform vital role in biological related activities. Study analyzed the lactoferrin protein potential present in camel milk only for enhancing its ability to stop the growth of cancel causing cell line, cause damage of DNA and for first time determine its antitoxin properties. Lactoferrin has antitoxidant properties which was analyzed by noticing its different effects for DNA damage and it provide comparison with vitamin C (Habib *et al.*, 2013).

Study involved the discussion of different biologically active properties which elaborate the characteristics of peptides derived from milk protein. Such properties involve binding of different essential minerals, antidiabetic, cardioprotective, antimicrobial, anticancer and immunity producing factors. Each biologically active property involved the in vitro based collection of data which was analyzed by getting awareness from human and animal based studies. Mostly evaluated study based on in vitro process. There is also increased in study conduction based on in vivo method for testing of peptides efficiency derived from protein present in milk and this in vivo method confirmed bioactivity of hydrolysates present in protein present in milk (O'Mahony and McSweeney, 2016).

Goats possess good adaptations to harsh and xeric climate which gave them ability to survive in the areas having marginal and landless farmers that is why goats play vital part in livestock industry. Goats contributed highly toward formation of meat and milk products. Milk obtained from goats showed difference from human and cow milk in term of composition, which lead the goat in formation of many characteristics related to sensations, nutritional values and in field of therapy. Goat milk contains higher amount of calcium, magnesium and phosphors than cow and human milk. Important proteins and medium sized triglycerides present in milk of goat imparting unique benefits to health. Individuals in adult age suffering from ulcer or gastrointestinal issues must be cured with the yogurt obtained from milk of goat which possesses soft texture. In comparison with the milk of cow, goat milk possesses zinc bioavailability. Milk of goat proved beneficial in treatment of many human related problems including constipation, diarrhea, disturbance in gastrointestinal tract and respiratory issues (Vaquil and Rathee, 2017).

Rats having malabsorption syndrome disorder due to reactions proceeding fifty percent in the small intestine. By comparing milk of goat and cow its is showed that improved digestive tracts automatically involved in the improved utilization of the protein, fats and other organic component and also enhanced the absorption of the phosphorus, calcium, copper, iron, magnesium, selenium and zinc contents (López-Aliaga *et al.*, 2010).

According to results of in vitro study which elaborate that cells from human body has been isolated who had drunk milk of goat from many breeds were stimulated to release the nitric oxides. After release of nitric oxides, components approached the blood circulation through lymphatic system and imparted the vasodilating, anthrogenic and cardioprotective impacts, and also prevented the blood containing vessels from accumulation of plaque (Davenport, 2002).

Goat milk was not considered as the perfect alternative in comparison with cow milk but according to recent conducted studies exhibit the immunity producing impacts of the milk derived from goat by studying both human and in vivo experimentation. Present study also elaborated the goat milk beneficial effects on the human blood stream by releasing nitric oxide contents. Release of nitric oxides produced the beneficial effects on the cardiac factors and helped in prevention of different infections due to antibacterial activities. Release of

cytokine from the milk of goat helped in maintaining the homeostatic condition of immune system (Jirillo *et al.*, 2010).

Cardiovascular related diseases was observed in patients which named as hypercholesterolemia which involved in the formation of the low density lipids and stimulate the reactions causing swelling, and this disorder was due to releasing cytokines in the heart aorta. Milk of goat used to form curd which carry lactic acid bacteria and antitoxidants which used as therapy as alternative against the hypercholesterolemia in order to decrease level of cholesterol in the blood. Main aim of present study was to know about the detrimental effect of the goat milk yogurt as a therapy against hypercholesterolemia. During study twenty rats have been used which were males *Rattus norvegicus*. During experimentation strains of wistar were equally divided into five groups naming as control group, hypercholesterolemia group, therapeutic group with dose of three hundred milligram per kilogram, therapeutic group having six hundred milligram per kilogram, therapeutic group having nine hundred milligram per kilogram. Male rats were given hypercholesterolemia diet during fourteen days and implication of goat milk therapy during twenty eight days. Result exhibited that less improvement in accumulation of lipids in reduced form and aortic cell swelling infiltration. Dose having nine hundred milligram per kilogram used in the goat milk therapy proved more effective in conclusion (Mahdi *et al.*, 2019).

Higher concentration of conjugated molecule was present in the goat milk which named as linoleic acid. Such conjugated molecule possesses properties as anicarcinogenic which play important detrimental role against the cancer related to mammary parts and colon in animal bodies (Palombo *et al.*, 2002; Jirillo *et al.*, 2010; Mittu and Girdhar, 2015).

Now a day home based remedies made common practice against the diseases and it is normal practice in population. Such practice enhanced the attraction of humans toward the breast feeding mother. Purpose of this study is to increase awareness to the breast milking mothers and telling them importance of nutritional factors of breast milk and important characteristics fulfilling the dietary requirements. Calculations based on statistic factors were carried out with help of Pearson coefficient and chi square test. After conduction of test it was observed that out of total women one thousand one hundred and eighty seven women acted on, while seven hundred and sixty eight claimed that they have awareness about utilization of breast milk as non-nutritional component on membrane of mucus, and four hundred and four of tested women claimed that at least one of method was used by them. Duration period of breast feeding is ranged as $p < 0.001$ and parity ranges as $p < 0.005$, which were interrelated with applying practical methods. It is concluded that methods involved I the parents education related to all possible risk chances and value of consulting medical specialist is very essential (Karcz *et al.*, 2019).

Disorder named as dry eye syndrome observed to paid impact on the million of human in this world. Many of treatments with use of homeopathic remediation carried out in order to treat ocular disorders and all these reports had been enlisted in the literature, very less scaled work had done based on the systematic which involved the accurate laboratory based models. Objective of this

conducting study was to analyze the efficiency of human milk and prickly pear which were widely consumed homeopathic based remedies in order to reduce the pathological markers. Benzalkonium chloride used model of dry eye mouse was observed in order to make study about the human milk and prickly pear. Benzalkonium chloride in 0.2 percentages was used to the ocular area of the mouse eye two times a day in order to induction of dry eyed pathology. Damage to the epithelial layer started to decrease with usage of human fat reduced milk treatment at fourth day and treatment was continued with material which was nopal derived. Full fat and fat reduced human milk proved the prevention of benzylkonium chloride induced impacts on the epithelial thickness of mouse eyes. More studies must required to give detrimental results about usage of human milk in treatment of patient with dried eye (Diego *et al.*, 2016).

Table 3: Modern uses of milk of various mammalian species.

Mammalian species	**Modern uses**	**References**
Milk of cow	Antibacterial, newborn baby	(McSweeney and Fox, 2003; Athreya *et al.*, 2019)
Milk of camel	HCV, diabetic, cancer	(Korashy *et al.*, 2012; Sboui *et al.*, 2012; Habib *et al.*, 2013; Khan *et al.*, 2013; El‐Fakharany *et al.*, 2017)
Milk of buffalo	Sources of minerals	(Ghanghro, 2019)
Milk of goat	Malabsorption disorders, inflammatory bowel disease, immunomodulatory activity, anticarcinogenic, antioxidant	(Davenport, 2002; Palombo *et al.*, 2002; Jirillo *et al.*, 2010; López-Aliaga *et al.*, 2010; Mittu and Girdhar, 2015; Moreno-Montoro *et al.*, 2017; Mahdi *et al.*, 2019)
Milk of human	Mucosal infections, eyes infection, diaper dermatitis, neonatal conjunctivitis, antibacterial effect	(Garib *et al.*; Gozen *et al.*, 2014; Diego *et al.*, 2016; Karcz *et al.*, 2019)

Human breast milk proved its effectiveness by having forty percent of zinc oxide which is applicable for purpose of skincare of newborn baby by giving process of diaper dermatitis healing procedure. Diaper dermatitis is known condition of new born which are dermatological common diseases and in recent time period many of methods are used for treatment of dermatitis including oil of sunflower and human breast milk and so on. Study involves the babies' population who suffered from diaper dermatitis and having rashes on the skin during treatment in intensive care centers. After completing the research it was observed that sixty three newborn out of total contacted to the human breast milk. Different parameters involving method of feeding, gestation period, use of antibiotic and way of cleansing of diapers and brands of diapers were observed. Use of barrier milk during experimentation provided more satisfactory and effective results of treatment as compared to human breast milk and more effective I treating dermatitis in newborn (Gozen *et al.*, 2014).

Human milk considered important and most effective if applied topically to treat neonatal conjunctivitis. To test the study there were settled formation of two groups which contain 565 newborn and these babies divided in two groups randomly. 1st group contain three hundred and twenty seven newborn and provided feed as breast milk for 1st 10 days. 2nd group contain two hundred and thirty eight who applied no breast milk treatment and kept as control group. Conjunctivitis disease observed in 9.1 percent of 1st group newborn and in 2nd group twenty five percent of newborn effected by conjunctivitis. Microbial activity of positive staphylococcus proved main cause of conjunctivitis. So it was concluded that application of topical breast milk is recommended against conjunctivitis (Pishva *et al.*, 1998).

Milk off mammals (i.e. cow, buffalo, goat and human) is used in modern scientific technology to treat various diseases as; antibacterial, newborn baby, HCV, diabetic, cancer, malabsorption disorders, inflammatory bowel disease, immunomodulatory activity, anticarcinogenic, antioxidant, mucosal infections, eyes infection, diaper dermatitis, neonatal conjunctivitis and antibacterial effect (Table 3).

CONCLUSION

The term milk having modern concept which involve all factors related to nutrition, technological use, structural composition and commercial importance criteria. From long time milk and its products has been used for medicinal purposes without any involvement of scientific awareness. Moreover, present information related to milk usage could provide services not only as nutrients sources but as important source of biologically active agents having properties of therapeutic use. Present study provides evidences about the milk contents used in therapy process and revealed the efforts to detect constituent of therapy more accurately.

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