

A Review on Effects of Raw Milk Consumption

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ABSTRACT- There is still a lot of discussion in the public about the potential advantages of raw milk intake, which is becoming more popular. On the one side, governmental or public health authorities like the Food and Drug Commission and the Centres for Diseases Prevention and Prevention are worried about the risk of contracting milk-borne infections if uncooked milk is tainted with people germs. This article explains why milk was pasteurized more than a century ago, how it helped to decrease the frequency of diseases related with raw milk intake, and the presence of bacteria in raw milk. Even when derived from medically normal cows or dairy that appeared to be of excellent quality, infections were found in up to a third of all raw milk cases tested. This study examines some of the widely held claims about raw milk's health advantages. Raw milk consumption boosts nutrition, reduces lactose sensitivity, and offers "good" bacterial has no factual basis and is based on beliefs. There is some epidemiological evidence suggesting children growing up in an agricultural environment have a lower incidence of allergies and asthma; however, a number of environmental variables may be at play, and raw milk intake is not directly linked to any "protective" impact.

KEYWORDS- Lactose Intolerance, Milk, Pathogens, Raw Milk.

I. INTRODUCTION

In 1908, Chicago becoming the United States' first city to approve laws mandating the pasteurization of cow's milk[1]. Unfortunately, legislative wrangling and a debate about "purity milk" vs. "cleansed dairy", it took another 8 years for it to be completely accepted in Chicago[2]. Around that period, public health authorities were concerned about the spread of bovine TB to people via cow's milk. By 1900, A cancer epidemic raced through Indiana in 1910, affecting over 300,000 cattle, and it was thought that up to 10% of all TB cases in people was induced by disease via drain ingesting[3]. 1 Managing and administering accreditation of causing bacteria livestock became increasingly challenging, while pasteurization grew in popularity as a cost-effective way to treat huge volumes of milk. TB was one of the main human health problems in the early twentieth century; for example, it is estimated that approximately 65 000 people died of tuberculosis caused by bovine sources in England and Wales between 1912 and 1937 [4]–[6]. The US General Protection Services produced the Standardized Milk Regulation in 1924 for possible acceptance by regional and municipal organizations; it is

now known as the Class "A" Milk Decree "Ordinance on Pasteurized Milk (PMO)[7]. Pasteurization is a term used to describe the procedure of warming food to kill bacteria "the procedure of boiling each molecule of dairy or cheese byproduct in correctly designed and maintained equipment to any of the specified pasteurized time/temperature combos". 3 The goal of those moment combos is to destroy all biological pathogens., and the most frequent pasteurization procedure involves quickly heating milk to 72 degrees Celsius and keeping it there 15 seconds at the very least (Table 1)[8]. 3 In certain countries, milks are exposed to greater heat procedures ; this milking is called to as ultra-pasteurized if packed conventionally; if the procedure is done aseptic conditions, the milk may be kept at ambient temperatures and is known to as super duper temperatures (UHT)[9]. More nations began to adopt the PMO strategy in the following decades. In 1938, Milk-borne outbreaks were predicted to responsible for 25% of all sickness outbreaks in the American States (linked to food/water) soon during World War II. Whey and liquid milk drinks are responsible for less than 1% of all epidemics began by meals consumption nowadays, because to widespread adoption the PMO specifies pasteurized and various sanitation processes [10]. 3 Because to the effectiveness of eradication efforts and the introduction of milk pasteurization, TB is now a forgotten illness in the United States. Raw milk intake is the subject of a widespread discussion regarding the dangers and possible benefits. Raw milk is consumed by a considerable proportion of Americans (3.4%), according to recent reports. The goal of this review is to examine the scientifically established microbiological (health) hazards of raw milk intake and to see whether there are any confirmed health/nutritional advantages [11]–[13].

A. Risk: Presence of People Pathogens

Raw milk has been discovered to include pathogens such as *Campylobacter jejuni* and *L. monocytogenes* in surveys from across the world, Pathogens including *Campylobacter* and *Listeria listeria* have prevalence rates as great as 13%. In other investigations, almost a third of all milk samples tested positive for at least one infection. As a result, we must presume that raw milk contains germs[14]. Several variables affect the frequency of viruses in milk, Ranch size, quantity of livestock on the farm, sanitation, farm administration practices, dairy capacity, seasonality, and various factors are all factors to consider[15]. Even when taken from individuals that are clinically healthy, raw milk may be contaminated with microorganisms. Pathogens may be found in milk that seems to be of high quality. Pathogens can contaminate

raw milk through at least four different mechanisms: direct passage from the cow's blood fecal bacteria, or eutrophication from human epidermis into milk, mastitis, fecal contamination, or contamination from people skin Milk farmers are a significant cause of a number of foodborne illnesses. The relative significance of numerous sources of contamination varies by pathogen and is determined by agricultural methods. Since infections are invisible to the naked eye, calculating their numbers might take weeks, determining the safety of raw milk before it is eaten can be very difficult. On days when raw milk is not tested, there is no assurance that pathogens are not present in the milk supply [16]–[18]. It's hard to ensure the security of raw milk by testing it on a regular basis due of the subsequent:

- Difficulties in collecting enough samples since milk contamination might be intermittent, Microbial counts might change from one day to the next [19].
- Bacteria are often connected with the fat phase of milk, and they are not equally dispersed throughout it.
- If the effective dosage is low, The quantity of creatures involved might be too little for the test to detect, but the numbers available might be enough to induce illness[20].
- There may have been extremely low starting quantities During the time of sampling, was under the testing product's thresholds of a pathogen, but if milk was kept incorrectly, the pathogen may develop.
- Testing for each and every kind of human infection is impossible.

Foodborne disease outbreaks have been linked to raw milk on many occasions. The data concerning dairy-related human illness outbreaks in the United States from 1993 to 2006 has been examined[21]. There was 121 incidents of dairy products with called pasteurization grade; 73 (60 percent) of these included raw milk products, resulting in 1571 recorded cases, 202 hospitalizations, and two fatalities. In the 21 countries that permit raw dairy sales, there were a total of 55 (75%) outbreaks. In places where the sale of uncooked dairy was forbidden, there was fewer breakouts and deaths[22]. Based to on updated research that covered the 5 years timeframe from 2007 to 2012, the mean frequency of epidemics connected to non-pasteurized milk were 4-fold higher than in the preceding research that covered the timeframe from 1993 to 2006. Even in places were unpasteurized dairy purchases are restricted, outbreaks induced by raw milk consumption have been observed; for example, throughout 1998 and 2009, six epidemics in Milwaukee was recorded, leading in 261 deaths and 27 hospitalization [23].

Nevertheless, the variety of diseases evaluated as part of well epidemics is probably just a fraction of the overall number of sicknesses associated to raw milk consumption [24]. For illustrate, in Wisconsin, 3.7 % of individuals with rare, locally obtained gastrointestinal diseases recalled drinking raw milk during their encounter time, according to routine surveillance data from 2001 to 2010[25]. Children were disproportionately impacted, with 76 percent of children under the age of five receiving raw milk from their own or a family member's farm. The frequency of occasional laboratory-confirmed cases increased over the study time illnesses among Minnesota residents The proportion of people who reported drinking raw milk was

25 times greater than the amount of raw milk Y epidemic instances. Moreover, they projected that up to 20500 Gophers, or 17% of fresh dairy consumers, may be affected, were sick with enteric infections after consuming raw milk throughout the research period[26].

B. Wellness Advantages Suggestions

A number of assertions have been raised about the physiological benefits that raw milk consumption may possibly provide. There is no solid scientific information to substantiate any of those purported healthcare benefits, according to current scientific analyses undertaken by several worldwide organizations.

1) Nutritional

The nutritious content of milk does not alter much after pasteurization. Pasteurization has little effect on protein quality; minimal denaturation of whey proteins (G7%) has been observed as a result of pasteurization, Gelation, on the other hand, has no influence on the nutritive value of proteins. Minerals proportions are unaffected by pasteurized because metals are relatively heat resilient. Pasteurization may result in modest vitamin C, folate (vitamin B9), vitamin B12, vitamin B6, and thiamine losses (G10 percent). Only vitamin B12 is a good source of these vitamins; milk contains low amounts of most of the vitamins mentioned above, which may exhibit small losses due to pasteurization. Pasteurization has no effect on the concentrations of heat-stable riboflavin (B2) or fat-soluble vitamins like vitamin A and E. Other variables affecting vitamin losses in milk include the kind of packing material, exposed to sunlight and preservation duration. Feed (such as pasture grazing) may have a significant impact on milk composition, and proponents of raw Eat variations in milk content are often confused with pasteurization-related changes in milk composition. Other milk processing methods, such as ultra-pasteurization and The nutritious content of milk is hardly affected by ultra-high temperatures.

2) Allergy

Culinary allergies is a kind of immunological reaction brought on by sensitivity to a certain kind of cuisine Enzymes found in cow's milk may cause a response in individuals termed cow's milk protein allergy, which is mediated by immunoglobulin EY (CMA). During the first month of a child's life, most young babies overcome this allergy. Since of their weakened gastrointestinal processes, young newborns may be more susceptible to CMA, which exposes them to more allergic responses from "intact" protein or lengthier polypeptide lengths. CMA patients did not tolerate raw milk, pureed and pasteurized, or homogenization and pasteurized. It's also worth noting that epidemiological evidence suggests that consuming pasteurized milk isn't linked to an increased risk of developing respiratory allergies or atopic dermatitis. Growing up on a farm has been linked to a lower incidence of allergies and asthma, according to many epidemiological studies.

The early intake of raw cow's milk is one potential component that has been proposed as being implicated in this impact. One problem is that milk is either eaten raw or boiled (cooked in a pot or container until it boils), This is a far stronger thermal processing than the widely utilized

moderate pasteurization technique. Filtration, fresh dairy, or a mild heating method, which results in very minimal alteration of milk proteins, is unknown., would have such a significant variation in allergenicity. The whey proteins element of dairy, which will be impaired if dairy cheese were substantially cooked, might be connected to any putative asthma-protective advantage of raw or gently warmed milk.

Because of its latent effect on people fitness, the gut microbiome is receiving a lot of interest. This complex microbiota is formed throughout infancy, and numerous variables, such as the kind of milk eaten (breast, raw, or pasteurized), may alter this system, affecting an infant's susceptibility to the development of allergies. It's worth noting that most health organizations suggest that infants be nursed exclusively for the first six months of their lives. Farm children are known to come into touch with a broader variety of bacteria/allergens than youngsters living in contemporary towns. It's conceivable that early exposure to these agricultural allergens may aid in the development of a stronger immune system in certain babies. Microorganisms that have been claimed to have an allergy-protective function have been discovered in the agricultural environment (e.g., barns and milk buildings). Since humans infections are often prevalent in fresh dairy, purposely exposing newborns to raw milk in order to boost their defensive systems would raise serious ethical concerns.

Eating milks subjected to various treatments altered allergic reactions to a nonrelated food antigen in a mouse model of gastrointestinal allergy. However, they discovered that individuals who were given raw milk had a higher allergic reaction than those who were given warm milk. As a result, there is no direct proof of raw milk intake having a positive effect on CMA at this time, but this is an area that needs to be researched further.

3) *Lactose Intolerance (Raw Milk Enzymes)*

Lactose is found in all kinds of milk (including human and breastfeeding), The lipase enzymes hydrolyzes it into sugar and lactate when we ingest it, which the body absorbs. Many people lose their capacity to digest lactose as they get older, and this may lead to lactose intolerance, After consuming or consuming dairy or milks, this produces digestive symptoms such as cramping, diarrhoea, and gas. Glucose sensitivity is reported to be helped by raw milk, among other things. When compared to pasteurization, breastmilk managed to prevent glucose absorption or dairy tolerance complaints in those with glucose permeability in a recent randomised uncontrolled experiment. There is no reason to believe that raw milk may help with lactose intolerance since it lacks the A-galactosidase enzyme. Individuals with lactose intolerance tolerate yogurts better because they contain large quantities of bacteria that produce the A-galactosidase enzyme.

Although certain proteases and lipases are found in small amounts in raw milk, no physiological function for these enzymes in human digestion has been shown. Because both the native milk proteinase (plasmin) and lipase (lipoprotein lipase) are generally heat stable, there would be minimal difference in activity between raw and pasteurized milk. In any case, raw milk enzymes are likely to be degraded/hydrolyzed in the digestive tract of humans.

There would be no variation in activity among raw and processed milk since both natural milk proteinase and ase are typically heat stable. Pure dairy proteins are expected to be diminished in people' digestive tracts in any scenario.

II. DISCUSSION

According to certain media sources, raw milk is healthful because it contains "good bacteria." "Live bacteria that give a health advantage to the host when consumed" is how probiotics are defined given in sufficient quantities." Lactic acid bacteria are considered probiotics in certain cases. Key probiotic Bacteria bacillus and Lacto acidophilus are examples of bacteria, on the other hand, should be present in raw bovine milk at very low levels since they do not compete effectively with the more prevalent kinds of lactic acid bacteria. Rather, substantial amounts of Bifidobacterium have been found in the digestive tract of cattle and people, and the existence of Probiotic bacteria in raw dairy has been thought to be a sign of fecal contamination. It is preferable that probiotics microorganisms be employed in industrial yoghurt.

- The probiotic bacteria in question was obtained from a person donor, and
- When consumed in high doses, the based confers known medical benefits

No fecal contamination of raw milk by probiotic bacteria meets any of these criteria. Ferritin, carboxypeptidase, cell lysis, cow globulin, bacteriocins, disaccharides, and oxidases are some of the proteins that may be found in milk are some of the antimicrobial systems found in milk. Pasteurized milk retains 70% or more of the activity of lactoperoxidase and lysozyme, while pasteurized milk retains 100% of the activity of the other components mentioned above. These antimicrobial mechanisms, taken together, are unable to inhibit pathogen development in raw milk. Lactoferrin and immunoglobulin levels in mastitic milk are often high, indicating that the milk is contaminated and that these antibacterial systems are enhanced to assist fight the bacterial infection. At the farm level, farmers may take precautions to minimize pathogen levels in raw milk by reducing fecal/pathogen contamination and keeping storage temperatures low to prevent pathogen development. To conclude, raw milk is not innately safe and, when taken, carries a significant risk of food poisoning. Breastmilk has no inherent health or nutritional benefits, and assertions to the opposite in the press have been refuted. Pasteurized milk is an excellent supplier of several key nutrients and has a good food security reputation, particularly for children and young people.

III. CONCLUSION

Numerous scientific investigations have shown that raw milk may contain a range of disease-causing microorganisms. These studies, as well as many foodborne outbreaks, clearly show the dangers of consuming raw milk. Pasteurization efficiently eliminates raw milk bacteria without affecting the nutritional content of the milk. Lactose is a kind of disaccharide that is only present in milk. Lactose levels in bovine milk are about 4.8 percent. Lactose intolerance is caused by a deficiency in

the enzyme beta-galactosidase, also known as lactase, which breaks down lactose into glucose and galactose during digestion. Lactose is found in all milk, raw or pasteurized, and it may induce lactose intolerance in those who are sensitive to it. Lactase is not found naturally in milk. Raw milk proponents argue that it does not induce lactose intolerance since it includes lactase produced by “beneficial” or probiotic microorganisms.

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