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Adulteration in dairy products and their risk to human life: On the verge of crying over spoiled milk

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ABSTRACT

Milk and dairy products are essential nutrients that contain vitamins and minerals which promote healthy living in human being regardless of any age group i.e. infants, adolescence, adult or elders. This opinion focuses on the adulteration and contamination of natural healthy items and tries to draw the attention of regulatory agencies to curb these malpractices and make sure that we do not cry over spoiled milk in the end.

Keywords: Adulteration; Milk; Dairy products

1. INTRODUCTION

Milk and dairy products are prime nutritional elements for healthy living. Consumption of milk and dairy products is affiliated with diverse health benefits. Consumption of milk and dairy products not only provides essential nutritional minerals required for early healthy growth but also stops bones demineralization in old age. Moreover, it plays pivotal role in developing and maintenance of strong teeth as well. A number of studies show that daily intake of milk reduce the risk of hypertension in both adults and children. Association of reduce risk of cardio vascular diseases is also related with the milk. There are substantial evidences that propose that milk has immuno boosting effect on risk of both colorectal and breast cancer. (The dairy council, 2014)

For instance yogurt is a rich supplier of calcium, protein, high quality source of vitamins, minerals and a unique food because it contains symbiotic bacteria called probiotics. Probiotics may help in providing support to the immune system against diarrhea and bloating which are side effects of using antibiotics. Probiotics are micro organisms like bacteria and fungi *i.e.* yeast which are proven by researches to have healthy effects on human health against gastrointestinal tract infections. (Peter Jeret, 2014) Furthermore, people with lactose intolerance can consume yogurt with no trouble as it contains lower amounts of lactose than milk. (Dairy council of California, 2014)

In addition to this, cheese is also a calcium rich food that may help reduce the risk for osteoporosis (Dairy council of California, 2014). To summarize the

points, milk and dairy products are natural nutritional supplements for infants, healthy young adults and elderly as well. However, the unregulated practice in countries like Pakistan and India render them susceptible to adulteration. (Dawn.com, 2014) This adulteration is transforming the health benefits of these products in to hazards and risk to the individual. This opinion is geared towards highlighting the issue among masses.

2. DISCUSSION

The importance of the dairy products can never be undermined but due to lack of interest of the regulatory bodies, adulteration of milk and dairy products results in detrimental effect on the health of consumers. Adulteration in these products is risking human body to immunodeficiency and exposing to cancer keeping in view the nature of the adulterants used. Other manifestations such as kidney failure, abnormal growth and diseases of joints and high blood pressure might occur.

According to official statistics, Pakistan is the fourth largest global milk producing country (The News International, 2014) Addition of water in the milk as adulterant is common practice to increase the bulk of product for generating better revenue. However it leads to the dilution of milk which alters stability and decrease enzymatic activity. (Pak Dairy Info) In order to preserve its physical appearance after adulteration of water, addition of starch, flour, urea, cane sugar, etc are all experimented. (The News International, 2014) Vegetable oil and formaldehyde are two other common adulterants of milk which when expose to air become rancid and cause hepatotoxicity, liver cirrhosis and make aldehydic proteins inside the body which trigger the development of toxic syndromes. Use of antibiotics during the life span of cattle is common but the negligence of withdrawal period which depends upon the half life of drug makes it possible for drug residues to be released in the cattle milk which indirectly have adverse effects on human health. Nausea, vomiting, diarrhea, enteritis, etc. may also be seen.(Pak Dairy Info) In dairy field, one of the most common trick to increase monetary benefit is the adulteration of highly pure milk i.e. sheep's and goat's with a milk of lower value in terms of its purity or handling. (Calvano CD et al, 2012)

There are number of techniques by which adulteration can be tested. For instance lactometer test and refractive index technique, chromatographic, immuno enzymatic, electrophoretic and mass spectrometric assays can be performed to detect the mixing of high quality milk with low quality milk (Pak Dairy Info and Calvano CD et al, 2012)

Addition of neutralizers like hydrated lime, sodium hydroxide, sodium carbonate or sodium bicarbonate which are prohibited can be detected by Rosalic acid test. For detection of glucose as adulterant in milk phosphomolybdic or barford test and diacetic test can be performed. (Food Editorials, 2014) However, the point of discussion remains the fact that the regulatory agencies need to pay heed to this malpractice and adulteration of dairy products with all the tools at hand as this is direly needed.

3. CONCLUSION

The regulatory agencies should come forward to control adulteration of milk and dairy products and devise a strategy to facilitate the supply of purified non adulterated milk and other dairy products thereby promoting healthy living.

CONTRIBUTION OF THE AUTHORS

Both authors contributed to the article in equal aspects, read and approved the final manuscript.

INFORMATION OF THE AUTHORS

Ali Saleem Rajput and Muhammad Hassan Khan are an undergraduate student of Batch 06, Faculty of Pharmacy, Ziauddin University.

Ethical approval

Not applicable.

Informed consent

Not applicable.

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Conflict of Interest

The author declares that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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