



Detection of Adulterants in Milk from Different Areas of Patna

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Milk, used as a basic food in India especially by children, old people and pregnant woman is being subjected to malicious practices such as adulterated by some milk vendors and khattal milkmen. Milk adulterated with toxic additives such as urea, formalin, water, salt sugar etc. should be properly checked. For this samples of khattal milk was collected from different areas of Patna namely Boring Road, Patliputra and Digha and adulterants were detected at Sudha Dairy Industry's laboratory. One sample of Sudha dairy was also taken to compare to quality difference. No adulterants were detected in Sudha Dairy Milk but of sample from Boring Road showed the presence of water, formalin & neutralizers, from Patliputra the common adulterants were formalin, neutralizers, sugar and water and Digha sample showed the presence of neutralizer, starch, urea and water. Thus, it was deduced that water due to its cheap availability dominated as an adulterant in a forementioned areas.

The adulterants pose great health hazards like they damage liver, heart & kidney, may also lead to heart attack. It's peak time to generate awareness and strict actions should be taken by the Indian Government so that neither the Khattal owners nor the Pilot Scale Dairy Industries should perform such malicious practices.

Some remedies suggested here to preserve milk is to store it at $4\pm 2^{\circ}\text{C}$ i.e. to prefer chilled and pasteurized conditions to preserve milk. Also, sensing systems for frequently used milk adulterants like whey protein and detergents should be developed to test the quality of milk.

Key words :- Milk, Adulterants, Khattal Milk, Quality.

Introduction :Milk is India's largest agricultural commodity in terms of its output value surpassing even major cereals like rice & wheat. It is an essential nutritional food for infants and adults alike. Milk is a complete food as its protein contains all the ten essential amino acids, vitamins A, D, E and K. Carbohydrates like lactose, minerals like potassium (K), Calcium (Ca), magnesium (Mg), Zinc (Zn) etc. Among these the bio-availability of calcium in milk is high & its uptake is important throughout life so, milk continues to be the most important source particularly in most unfavourable physiological condition such as achlorhydra. (Peter C Ewood, 2005) Both animal and human studies have suggested a deduction in colon cancer by calcium supplement & by milk (Cho E at al, 2004). Water is the main constituent of milk. Milk processing is designed to remove water from milk to reduce the moisture content.

But milk is also a potential carrier of microbes, chemicals or adulterants from production to transportation & poses hazards to public health that is

unsafe. Due to this there are evidence that milk consumption has fallen over the past 20-25 years in many countries. This is mainly due to adulteration of milk which alters the milk characteristics Mixing something impure with something genuine or an inferior article with a superior one of the same kind (West Encyclopedia American Law, 2005) is known as adulteration.

Milk is adulterated mainly with the toxic additives like Urea, Formalin, Caustic soda etc. to increase the consistency and it is also said that such adulterated milk remains intact even for two days or more while ordinary milk goes sour within a day (V Degulmath, 2002) The huge profit margins by sales of adulterated milk has made this happen. Substances such as sodium bicarbonate (to increase the shelf life of milk), starch (to increase its viscosity), sweetening agents (to improve its taste) & Urea to lend it uniformity) are added to make it preservable and acceptable. These are the substances that are mixed to milk so that the quantity of

that milk may rise up without paying cost for that raised quantity which leads to a high profit. Stringent actions by Food and Drug administration (FDA) officials have brought many adulterants to book but it is not enough (M.S.Kamnath, 2008). Milk adulterated with chemicals was firstly detected in Kurukshetra, in November, 1994. Now, the menace of milk adulteration has spread to Rajasthan, Uttar Pradesh, Himachal Pradesh & to milk deficit areas of Madhya Pradesh, Orissa and even Bihar (Arindam Mukherjee, 1006). Some milk vendors have mastered the trick of milk adulteration from various Khattal milk & private milk dairies. Some of the reasons of adulteration are perishable nature of milk, demand and supply gap, unorganized procurement supply and lack of quality system.

Method & Methodology :

Area of study

The cow's milk sample was collected from different areas of Patna Viz Boring Road, Patlitpura & Digha & one milk sample was taken from Sudha Dairy.

Tools & Techniques:-

Glassware's:- Test tube, flasks, pipettes & Lactometer

Chemical used :- Alcohol, Rosalie acid, conc. sulphuric acid, Resorcinol hydrochloric acid, 1% Iodine, Para dimethyl amino benzaldehyde (16%), silver nitrate (0.8%) & 1% potassium dichromate.

Sample Size & Sampling Method:-

The liquid milk samples were randomly collected from the khatal and 250ml of each sample was taken and different test was performed for each of the adulterant present

Method of Data Analysis:-

The milk samples were subjected to organic leptic test to detect the odour, colour & taste of the sample

The standard observation for the presence of each of the adulterant was taken.

Result :

On the basis of the standard, result for the milk sample of three different areas was taken.

Area	Sample	Adulterants Detected
Boring Road	A	Neutralizer, Starch, Water
	B	Starch, Water

Patliputra	C	neutralizer, Formalin, Sugar, Water
	D	Formalin, Water
	A	Neutralizer, Formalin, Sugar, Water
	B	Neutralizer, Water
Digha	C	Salt, Starch, Water
	D	Formalin, Sugar, Water
	A	Neutralizer, Salt, Water
	B	Formalin, Sugar, Starch, Water
Sudha Dairy	C	Neutralizer, Starch, Urea, Water
	D	Neutralizer, Sugar, Water
	S	No detection

Discussion :

Various adulterants detected poses different health hazards as motioned below:-

- (a) Urea – It is mainly added in the preparation of synthetic milk. It is harmful to heart, liver and Kidney.
- (b) Starch and Sugar – It's addition increases the SNF Value. Their addition in milk may lead to diabetic attack and obesity
- (c) Neutralizer – Neutralizers such as, caustic Soda which contains sodium acts as a slow poison for those suffering from hypertension and heart ailments
- (d) Formalin – It is primarily used for preservation in view of its wide-spread use, toxicity and volatility. Formalin is a significant consideration.

Conclusion :

It can be concluded that the adulteration of milk is practised in large extent over different areas of Patna. India leads the world in total milk production, however, the tropical climate, unorganized milk production, laxity in quality control, a lo-psided demand and supply position coupled with evolution of recalcitrant pathogens in the dairy industry are the major factors causing the development pace to bog down significantly. The situation is further being deteriorated by reports of synthetic milk being prepared comprising of chemicals like urea, neutralizer, detergents which can get metabolized into carcinogenic and endocrine

disrupting agents thus jeopardizing the health of people. Thus, detection of adulterants in milk and other products and by products is one need of the hour which will not only address the national need and export potential of Indian Food Processing Industry but will lead to developing of sensing technologies and, therapeutics at Competitive International level. The comprehensive approach will add value by controlling the adulterated milk.

Thus it would not make sense for the basic food being adulterated and our healthy life being subjected to deterioration just for the profitability of these milkmen. Now, it is a peak time to generate an awareness and concern among people of all class before the adulterants engulf the future of the budding infants and future generations.

Suggestion :

(a) Development of sensing systems for frequently used milk adulterants like whey protein and detergents. In this, incorporation of sensing system occurs with the suitable sensing system so that the whole bio-sensor can be developed into quality detection kit or unorganized dairy sector level. It can also be done at industrial level.

(b) Adulteration of any kind is banned and therefore other organization associated with Dairy Industry should be given strict directions to stop such malpractices.

(c) People should be made aware of the dangers of such milk adulterations with the help of add campaigns, media, journals, etc.

(d) Pregnant women and babies should be prevented from drinking Khatthal's cow milk. Instead Packaged and Pasteurized milk available in the market should be prioritized.

(e) Rather using adulterants or preservatives milk should be kept at low temperature which prevents microbes from multiplying and rendering off tastes to its as the enzymatic activity of microbes slows down and thus milk is prevented from being curdled. Milk should always be preserved at +4°C.

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Novels made into Films

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Literature has been the mirror of society. It has found its influence in varied disciplines of life. Literature has itself been influenced by other forms of art and has also had a marked influence on other streams of art. Film making and Cinematography are such fields of art where literature and especially the genre of the novels have made immense impact. A novel like Pride and Prejudice written by a Victorian novelist continues to inspire filmmakers all over the world including India, to make a film as an adaptation of this novel in the twenty first century. This fact speaks of the universality as well as the lasting quality of the novel – as a genre of literature.

Novels have been frequently adapted for films. Adapting novel into a film has been described as boiling an ice to make a stock cube. The average genre novel today is 80-120,000 words while the average hour and a half action screenplay is only 5000 words or so. One of the greatest pleasures of movie going is seeing a beloved novel adapted for a screen, one of the big delights of novel reading is encountering a book that has been made into a favorite film.

Key Words: *Adaptation, Compression, Elimination, Screenplay, Cinematography.*

Introduction :

Over the ages writing has been a part and parcel of man's quest for expression of his wishes, emotions and truth. The Renaissance period brought along the dawn of an era of literary activities wherein books became the commonest method of learning and education. Books rapidly grew to a status of being regarded not only a source of education but a means of entertainment as well. In the beginning of the nineteenth century books were mainly being published with the sole purpose of reaching out to the readers' heart and that's when the concept of novels came in. The writers would provide just the spice needed to quench the reader's appetite. Nineteenth– Twentieth Century was the period of uprising of the English literature. Reading novels became a sophisticated tendency in the modern English society. Great authors like Austen, Stevenson, Maupassant, and Shakespeare enriched the English Literature with their great works. The never ending craze for appealing stories continued till the entertainment criterion was totally overtaken by the electronic media and the new television age began. Reading was overthrown as a passion by the rising television viewing

statistics. Films gave a great boost to television viewership. People began to prefer visual stories over stories, the experience that books gave them

Initially, however, films were made just to entertain the masses and contained light elements. As the time advanced the public became more and more demanding and wanted more than just fun. They began to relate movies to their personal lives and sought more of wisdom in it which they once got from intellectual piece of writing. Many of the existing novels were then converted into films which gave a live visual glimpse of those soul enriching stories which could once be only imagined. Thus as this concept got a boost a new trend of converting novels into major films began which is continued until the present day.

Novel adaptation under research study are :

1. PRIDE AND PREJUDICE {JANE AUSTEN 1813}
2. A PASSAGE TO INDIA {E.M.FORSTER 1924}

Pride and prejudice :

The novel was penned down by the great Victorian

novelist Jane Austen, in the year 1813. It happens to be Austen's most acclaimed novel. This novel has been one of the most reproduced of her works. Over the years, many filmmakers have tried out the film adaptation of the novel. The most successful being the 2005 adaptation directed by Joe Wright, screenplay by Deborah Moggach, starring Keira Knightly and Mathew McFadden. In this production, the entire story of the novel was compressed into two hours nine minutes of screen time. Some of the notable changes from the original book were observed:

Heavy time compression of several major sequences, including Elizabeth's visit to Rosings Park and Hunsford Parsonage, Elizabeth's visit to Pemberley, and Lydia's elopement and its subsequent crisis.

The elimination of several supporting characters, including Louisa Hurst, Mr. Hurst, Lady and Maria Lucas, Mr. and Mrs. Phillips, the Gardiners' children, Mrs. Annesley (Georgiana Darcy's governess), several of Lydia's friends (including Colonel and Mrs. Forster), and various military officers and townspeople.

The elimination of several sections in which characters reflect or converse on events that have recently occurred - for example, Elizabeth's chapter-long change of mind after reading Darcy's letter.

The filmmakers changed several scenes to more romantic locales than the ones in the book. For instance, in the film, Darcy first proposes outdoors in a rainstorm near a beautiful lake; in the book, this scene takes place inside a parsonage. In the film, his second proposal occurs on the misty moors as dawn breaks; in the book, he and Elizabeth are walking down a country lane in broad daylight.

Bride and Prejudice [2005, Director - Gurinder Chadda, Screenwriter – Paul Mayeda Berges] is the modernized retelling of this classic novel. It has a beautiful Indian heroine [Aishwarya Rai] clashing with a handsome imperialist American [Martin Henderson]. This adaptation of Jane Austen's story is full of color and lively music. In order to get the story of pride and prejudice to work for a contemporary era many changes and compromises had to be made. It would be unreasonable to expect Bride and Prejudice remain completely faithful to the original novel. But the core

essence of the plot remains intact. A clash of wills, of preconceived notions and cultural restrictions are what make Pride and Prejudice and Bride and Prejudice what they are.

Literary adaptations just don't get any better than director Joe Wright's 2005 version of Jane Austen's 'Pride and Prejudice'. One of the greatest love stories of all time, 'Pride and Prejudice' comes to screen in a glorious adaptation. It is the classic tale of love and misunderstanding that sparkles into romance, wit and emotional force.

A passage to India :

The novel was penned down by E.M. Forster in the year 1924. There had been two adaptation of A Passage to India. The first being a play by the daughter of an Indian diplomat. After watching the first public performance of Santha Rama Rau's dramatization of his 'A Passage to India' at Oxford in 1960, E. M. Forster, then 81 years old, walked onto the stage to express his pleasure with the performance.

"How good the actors were," said Forster. "And how pleased I am that there were so many of them. I am so used to seeing the sort of play which deals with one man and two women. They do not leave me with the feeling I have made a full theatrical meal . . . they do not give me the experience of the multiplicity of life (*E.M Forster's remark after the first public performance of Santha Rama Rau's dramatization of his 'A Passage To India' at Oxford in 1960.*). Forster, who died in 1970, might be equally pleased by most of David Lean's respectful, handsome new screen version, which cites as its sources the play as well as the novel. The film is very much "a full theatrical meal, (*Vincent Canby "A Passage to India" New-York Times. Dec 14,1984*)" and one that conveys a lot of "the multiplicity of life" (*"A Passage to India". Dec 14,1984*) one seldom sees on the screen these days. The film is vast in physical scale and is set against a tumultuous Indian background. Mr. David Lean shares with E.M. Forster an appreciation for the difficulties involved in coping with the universe. Because of the reputation the novel has acquired as a classic since its publication in 1924, one tends to forget what a smashingly good story it is – grandly sorrowful muddle that becomes a mystery for the saddest, nastiest of reasons.

Set in the fictitious provincial city of Chandrapore in the 1920's, when the British Raj was being threatened by the King-Emperor's increasingly impatient Indian subjects, *A Passage to India* is essentially a story of what can happen as a result of a succession of wrong-headed decisions and dreadful misunderstandings, of trust either given too easily or withheld far too long.

Though the initial scenes are set in London, the film really begins with the arrival of the uncommonly wise, kind and sensitive Mrs. Moore (Peggy Ashcroft) in Chandrapore. She has come out from England to visit her son Ronny Heaslop (Nigel Havers), the British Magistrate, and to chaperon Adela Quested (Judy Davis), the proper young Englishwoman to whom Ronny is unofficially engaged.

Almost immediately the liberal-minded Mrs. Moore and Adela are upset by the cloistered life of the small, hopelessly genteel British colony at Chandrapore. With the help of the local School Superintendent, Richard Fielding (James Fox), Mrs. Moore and Adela attempt to break the invisible raj-barrier.

Through Fielding, they meet an eccentric old Brahmin scholar, Professor Godbole (Alec Guinness), whose words of wisdom, being inscrutable, they hang onto with delight, and an earnest, eager-to-please young Moslem medical doctor named Aziz (Victor Banerjee), a hard-working, financially impoverished widower who both admires and loathes the British in Chandrapore.

Aziz gets carried away by the unexpected friendliness of Mrs. Moore and Adela at a small tea party. He invites them, along with Fielding and Professor Godbole, to go on an elaborate outing he cannot afford, a daylong picnic to the Marabar Caves, always called "extraordinary," though for reasons that no one can satisfactorily explain. The disastrous consequences of this outing, which occurs early in the film, set up everything that comes after, including an uproarious, agonizing courtroom melodrama during which Aziz is accused of the rape of the once dazzled, now nearly catatonic, Adela.

What happened in the Marabar Caves? This question pursued Forster throughout his life, and he always avoided answering.

Mr. Lean's screenplay is in most ways remarkably faithful to the novel. The audience knows, or at least thinks it knows, exactly what happened in the caves, which makes poor Aziz's trial even more outrageous than it is in the novel.

This conscious decision on Mr. Lean's part subtly distorts the original, but it also emphasizes some surprising revelations about Adela. Even more peculiar is Mr. Lean's decision to withhold from the audience a scene in the novel that explains Mrs. Moore's seemingly uncharacteristic actions preceding Aziz's trial. Though he has made "*A Passage to India*" both less mysterious and more cryptic than the book, the film remains a wonderfully provocative tale, full of vivid characters, all played to near perfection.

Conclusion :

One aspect about the story that remains unnoticed is that the readership surely surpassed the movie in its viewership. The movie undoubtedly takes the viewers' imagination to a level of virtual reality by including the response of senses but the fact remains that the intricate details and the spell bounding words that capture the readers' imagination and plunges them into a fiesta of enthusiasm is an experience which only reading the actual book can provide. The movie no matter how good ultimately shatters the viewer's figment of imagination. The movie ultimately is either too short, less detailed or sometimes even has a totally different adaptation of the actual interest and ultimately fails to stand up to the readers' expectations. Generally the paranoia created by the movie is short lived as compared to that of the book. Many a time, it so happens that a lot of excitement is attached to a movie adapted from a book and a little shift from it is received in a negative manner as happened with the movie adaptation of Dan Brown's much hyped book '*The Da Vinci Code*'. There still continue to be stories which have not been read much and the audience come to know of them only through the channel of cinema. The recent success of the Oscar winning movie '*Slumdog Millionaire*' [Directed by- Danny Boyle and Loveleen Tandon, Screenplay- Simon Beaufoy] can be attributed to the book '*Question and Answers*' by Vikas Swarup, from which it has been adapted. This was an instance where the movie created a greater thrill than the novel itself.

Despite the fact that cinemas have taken over the leisure time of the modern society and reading has occupied a backstage; the lasting impact that a classic reading provides is greater than what could be provided by a two hour visual portrayal of the similar element. Hence, though cinemas provide us with an experience totally different and more realistic, yet the charm that reading and expression of emotions via writing provides is worth cherishing.

Be sure what you are remembering is what you have read not what you have seen.

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