

# A Study on Adulteration of Milk, Wheatflour, Red Chilli Powder and Salt from Different Zones of GHMC, Hyderabad

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**Abstract:** Adulteration is an addition of another substance to a food item in order to increase the quantity which may result in the loss of actual quality of the food item. The present study was undertaken to check for the presence of adulterants in milk, wheat flour, red chilli powder in both branded and unbranded samples and to check for adulterants in five different branded salt samples. All the samples of wheat flour, milk, red chilli powder and salt were collected from five different zones of GHMC, Hyderabad. Milk samples were checked for the presence of common adulterants like starch, cane sugar, urea, sodium chloride, hydrogen peroxide, ammonium sulphate, boric acid, formalin, pulverized soap, detergent, skim milk powder and vanaspati. Wheat flour samples were checked for the presence of adulterants like excessive sand and dirt, maida, chalk powder, excess bran and boric acid. Red chilli powder samples were checked for the presence of oil soluble dye, water soluble dye and rhodamine. Salt samples were checked for the presence of chalk powder. The results showed that out of 75 branded milk samples the maximum adulteration was found with formalin (73.3%). In unbranded milk samples the maximum adulteration was found with cane sugar (53.3%). In wheat flour 37% of samples were adulterated with maida, 28% with excessive sand and dirt, 9% with chalk powder and 7.9% with excess bran. 76% of the branded chilli powder samples were adulterated with water soluble dye, 68% with oil soluble dye and 56% were adulterated with rhodamine. 54% of the unbranded chilli powder samples were adulterated with both oil soluble dye and water soluble dye and 46% were adulterated with rhodamine. Among 60 salt samples from five different brands it was found that 15 samples of one brand was adulterated with chalk powder. Thus it has been observed that even branded samples show a high level adulteration. This major menace needs to be tackled both at the government level as well as the consumer level. At the government level laws need to be stricter and to be implemented. Similarly awareness has to be created among the consumers.

**Keywords:** Adulteration, Health, Milk, Wheatflour, Chilli powder, Salt

## 1. Introduction

Adulteration is the act of either adding extraneous substances (adulterants) into food items or reducing essential nutrients partly or wholly for financial gain or due to carelessness and lack of proper hygienic condition during processing, storing, transportation and marketing. This ultimately results that the consumer is either cheated or often becomes victim of diseases.

Adulterants are chemical substances which should not be contained within food or beverage, and may be intentionally added to more expensive substances to increase visible quantities and reduce manufacturing costs, or for some other deceptive or malicious purpose. Because of that it is important for the consumer to know the common adulterants and their effect on health since the increasing number of food producers and the outstanding amount of foodstuffs import enables the producers to mislead and cheat consumers. (Anita.G and Neetu.S, 2013).

### Objectives:

Considering the menace of adulteration, the present study was undertaken with the following objectives:

1. To check for the presence of common adulterants in milk.
2. To assess for the presence of adulterants in wheat flour.
3. To check for the presence of adulterants in chilli powder.

4. To check if salt was adulterated with chalk powder in the branded salt samples collected from the five zones of GHMC.

## 2. Methodology

### Area of Study:

This study was conducted in the biochemistry laboratory of Madina Degree and P.G College for women.

### Sample Size:

From five different zones of GHMC, Hyderabad the following number of samples were collected to check for the presence of adulterants.

- 150 raw milk samples, 75 branded and 75 unbranded samples.
- 151 wheat flour samples.
- 120 red chilli powder samples, 79 branded and 41 unbranded samples.
- 60 branded salt samples.

### Annexure: 1

## 3. Results and Discussion

### Milk:

Formalin was the most common adulterant (68%) found in majority of branded milk samples, followed by salt

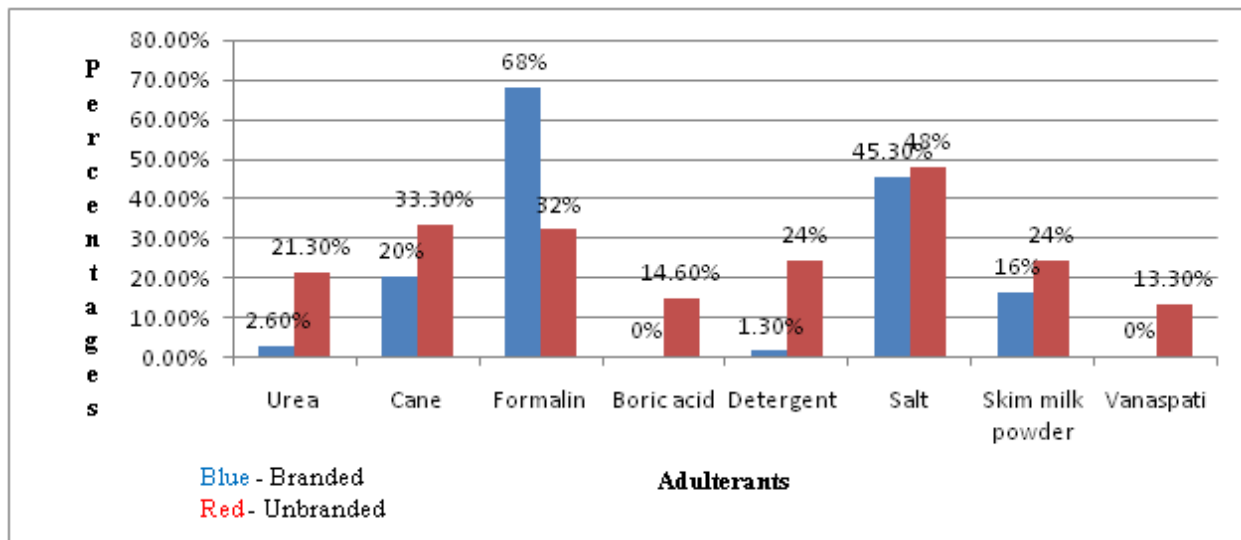
Volume 8 Issue 7, July 2019

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(45.30%), cane sugar (20%), skim milk powder (16%), urea (2.60%) and detergent (1.30%). In unbranded milk samples, the most common adulterant was salt (48%)

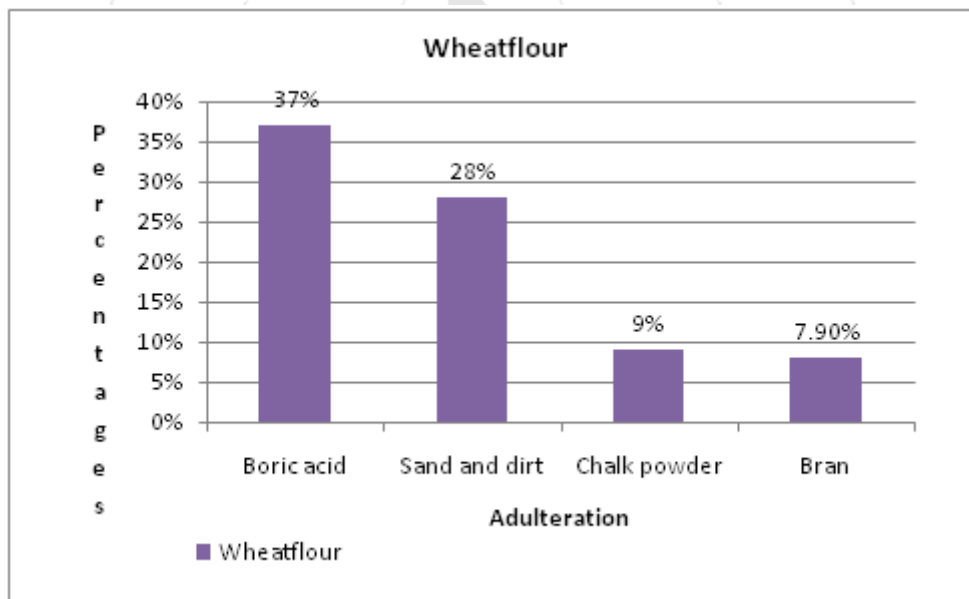
followed by cane sugar (33.3%), formalin (32%), skim milk powder (24%), detergent (24%), urea (21%), boric acid (14.60%) and vanaspati (13.30%) respectively.



**Wheat Flour:**

From all the five zones, 37% of total samples were found to be adulterated with boric acid, 28% with excessive sand

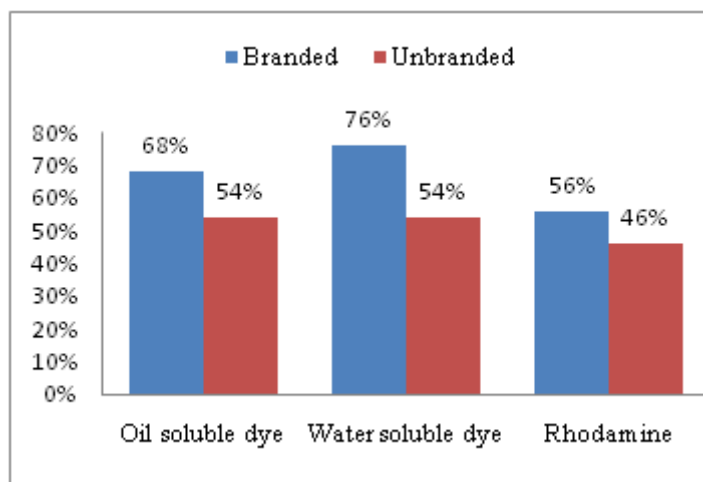
and dirt, 9% with chalk powder and 7.9% with excess bran.



**Chilli Powder:**

When percentage of adulterants in chilli powder in both branded and unbranded samples were tested it was observed that 76% of the branded samples were adulterated with water soluble dye, 68% with oil soluble

dye and 56% were found to be adulterated with rhodamine. 54% of the unbranded samples were adulterated with both oil soluble dye and water soluble dye and 46% were adulterated with rhodamine.

**Salt:**

Among the 60 samples of five branded salt samples one brand was found to be adulterated with chalk powder

while the other four brands were not adulterated with chalk powder.

	Brand I	Brand II	Brand III	Brand IV	Brand V
Chalk Powder	Unadulterated	Unadulterated	Adulterated	Unadulterated	Unadulterated

In a study conducted by Navya.P *et al.*, (2017) in Secunderabadm, selected food items were analyzed for detection of adulterants purchased from local grocery stores. Qualitative tests were carried out. It was found that 55% of the common salt samples tested showed positive result for the presence of chalk powder.

In a study conducted by Abhirami .S and Radha .R (2015) in Coimbatore, tests were carried out by chemical analysis and chilli powder was found to be adulterated with water soluble coal tar dye.

Similar findings were observed in a study conducted by Sharma .S *et al.*, in Phagwara. Food adulterants were analyzed by physio-chemical methods. The study revealed that different food items including chilli powder were found to be adulterated with dyes.

A study was conducted by Awasthi .S *et al.*, in Bangalore. Food materials were collected from different departmental and local grocery stores. They were checked for the presence of adulterants by biochemical qualitative analysis. It was found that chilli powder showed the presence of adulterants.

A study was conducted by Jaiswal .S *et al.*, (2016) in Allahabad. The aim was to detect the presence of non permitted food colours in spices using preliminary test and thin layer chromatography. 15 samples of chilli powder were collected from local areas and were analyzed for adulteration with commonly used food colors such as Sudan III and artificial colors. It was found that 9 out of 15 samples of chilli powder were adulterated with Sudan III and artificial colors.

#### 4. Summary and Conclusion

Milk, wheat flour, chilli powder and salt samples were collected from the five different zones of GHMC, Hyderabad namely East, West, North, South, and Central. The study revealed that the samples contained various types of adulterants.

In a study conducted by Waghray .K *et al.*, (2010) in Hyderabad, red chilli powder was analyzed in the laboratory by standard qualitative tests given by AGMARK and PFA. They found that chilli powder samples showed the presence of added color (92%), saw dust (48%) and metanil yellow (8%).

Out of 75 branded milk samples the maximum adulteration was found with formalin (73.3%). In unbranded milk samples the maximum adulteration was found with cane sugar (53.3%).

In wheat flour 37% of samples were adulterated with maida, 28% with excessive sand and dirt, 9% with chalk powder and 7.9% with excess bran.

Similar findings were reported in a study conducted by Abid.T.K *et al.*, (2013) in Karnataka. 75 random samples were tested among which 10.7% of the salt samples were adulterated with insoluble impurities and 2.7% chilli powder samples were found to be adulterated with artificial colour.

76% of the branded chilli powder samples were adulterated with water soluble dye, 68% with oil soluble dye and 56% were adulterated with rhodamine. 54% of the unbranded chilli powder samples were adulterated with both oil soluble dye and water soluble dye and 46% were adulterated with rhodamine.

Among 60 salt samples from five different brands it was found that 15 samples of one brand was adulterated with chalk powder.

The FSSAI has strictly implemented the act but probably awareness has to be created amongst the consumer regarding the health hazards associated with adulteration. If food inspectors are vigilant and active, the risk of food toxicity can be minimized at all levels of food supply and consumption. Simple measures can prevent further complications, particularly those caused by microbiological contaminants. Fatal diseases and health hazards associated with food adulteration that are prevalent in India can be minimized and consumers can have good health. The social life in the communities can be strengthened resulting in less expense on health related problems. Citizens aware of food adulteration and contamination can arrange camps/campaigns through local bodies and safe food can be the goal for all concerned.

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