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**CHAPTER V      PREVENTION OF ADULTERATION**

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## CHAPTER - V

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### PREVENTION OF ADULTERATION

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ADULTERATION has been omnipresent in India and is as old as civilisation. Its references are found in scriptures and Arthshashtra.<sup>1</sup>

Food adulteration is a crime and is punishable. Adulteration consists of addition of any foreign material to any given food item which is intended to increase the weight or measure of that item and thereby serve to obtain higher profits to the seller.<sup>2</sup>

The main inducement of adulteration is the tendency of the purchaser to buy things cheaper than a standard price though this may not be the reason in all cases. A general lack of character and ethics in our trading community and the temptation to make a fast buck by exploiting a given situation can be said to be a contributory factor. The insufficiency of the law and enforcement agencies and the system of long drawn out litigations are also the causes of adulteration. Lack of consumer consciousness is, however, the single largest factor that has led to adulteration.<sup>3</sup>

#### CATEGORIES OF ADULTERATION :

1. Unintentional : Commodities are mixed up with ingredients as a result of harvesting, transport, distribution or manufacture

Examples : Wheat mixed with mud and sand, paddy mixed with hay, rice mixed with husk, etc.

2. Mixtures of cheaper substances : For example, petrol mixed with kerosene, rava mixed with iron filings, wheat mixed with bajra, food articles mixed with stones, sand, iron pieces, etc. Foreign matter is added with the commodity for example, prohibited colour, water in milk, dalda is mixed with ghee, etc.

3. Mixing 'used' material with fresh.<sup>4</sup>

For example Loose leaf tea is sold with used and dried leaves.

4. The article has been prepared, packed or kept under insanitary conditions or is rotten, decomposed or insect-infested or unfit for human consumption or out dated for use. [expiry date has passed]

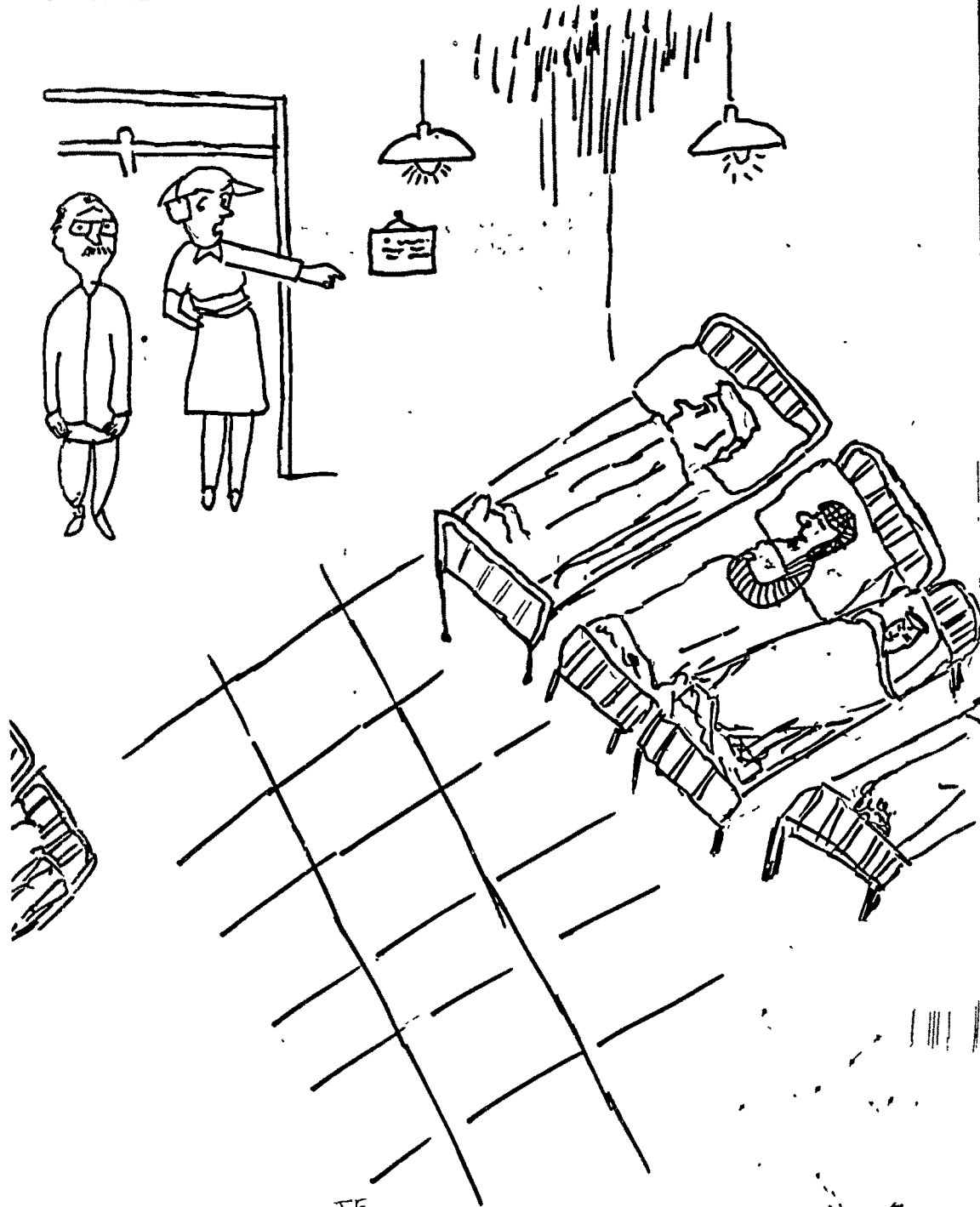
5. The article is obtained from a deceased animal or contains poisonous or harmful ingredient or has been kept in a container which has not been enamelled or tinned or protected rendering the article injurious to health.

6. The article contains colouring matter other than that prescribed and in quantity not within the prescribed limit or contains prohibited preservatives or permitted preservatives in excess of limits prescribed.

7. If quality or purity of the product falls below prescribed standards.<sup>5</sup>

#### EFFECTS OF ADULTERATION :

a) No full value for money : Return on money spent by the consumer is not full in terms of quality.



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FIRST, ADULTERATED FOOD. NEXT,  
AN ADULTERATED CEMENT CONSTRUCTION  
COLLAPSED ON HIS HEAD! NEXT A CASE  
OF ADULTERATED MEDICINE. AFTER THAT . . .

- b] Black money : Adulteration generates black money to unscrupulous traders. This adds to fiscal and social worries.
- c] Higher taxes : Administrative cost to counteract the evils of adulteration goes up. This cost is borne by the consumers in the long run.
- d] Health problem : Consumption of adulterated stuffs results in infection, diseases and many other health hazards.
- e] Loss of confidence : Sellers indulging in adulteration become more dishonest and hardened in crimes. People lose confidence in the order. In Bhopal in Madhya Pradesh a trader by the name, Rasool-Ahmed was held guilty on 28.08.73 of adulteration. Later he got elected as an M.L.A. and became a minister. The clutches of law failed in punishing this dishonest man who later became a minister.<sup>6</sup>

#### EFFECT OF ADULTERANTS:<sup>8</sup>

Given below is a list of some common food articles, the adulterants used and the possible effects of presence of adulterants on health.

TABLE NO. 4

#### EFFECTS OF ADULTERANTS

Food Articles	Adulterants	Effects
All types of Food	Pesticide residue	Serious poisoning with damage to nerves and vital organs.
Mustard Oil	Argemone Oil	Loss of eyesight, heart diseases and tumour, beriberi.

Edible Oils [like Coconut Oils, Badam Oil]	Mineral Oil [used motor oil]	Damage to liver, Carcinogenic effects.
Besan from Arhar Dal and Channa Dal	Kesai Dal	Paralysis & leprosy
Chilly powder and other spices	Saw dust, etc.	Stomach trouble.
Sweets & aerated Water	Inedible Colours	Liver damage & cancer.
Alcoholic beverages	Poisonous adulterants	Blindness & death.
Non-alcoholic beverages	Non-permitted coalter dyes and artificial sweetner	Anamia and epileptic convulsions.

Food Adulteration must be fought : There are ways to fight against food adulteration :

- i] Food articles can be tested by simple tests at home.
- ii] Food inspectors and sanitary/health inspector are available to help the cause.
- iii] Food can be analysed in laboratories [it costs little].<sup>9</sup>

#### DETECTION OF FOOD ADULTERATION :

There are simple tests to detect adulteration. These quick tests are not conclusive tests for detection of adulterants and in no way replace laboratory tests.

The techniques of adulteration have also made tremendous strides. The adulterants are so chosen by the traders that they resemble a food article which is adulterated either in appearance or in one or more of its inherent qualities. This makes the problem of combating adulteration further difficult on a household scale.

The tests do help in creating a reasonable amount of suspicion on the purity of the stuff. Any firm conclusion about the presence of the adulterant can be drawn only after detailed analysis in a competent food laboratory.

TABLE NO. 5  
DETECTION OF ADULTERATION

Sl. No.	Name of food article	Adulterant used	Simple test to detect adulteration
01.	Ghee or Butter	Vans pati	Take about one tea spoon ful of melted ghee or butter with equal quantity of hydrochloric acid in a test tube. Add to it a pinch of cane sugar. Shake this well for a minute and let it stand for five minutes. If a crimson colour is seen on the lower part of the test tube, the ghee or butter is adulterated with vanaspati.
02	Milk	Water	The reading of lactometer should not be less than 1.026. Put a drop of milk from the container on a polished vertical surface. If it flows slowly leaving white trail behind it or if it stands still, the milk can be considered un-adulterated. Adulterated milk will flow immediately without leaving any mark.

[This test is not valid if skimmed milk or other thickening material is added]

	Starch	Add tincture of iodine. Indication of blue colour shows the presence of starch.
03. Edible Oil	Argemone Oil	Add concentrated nitric acid to the sample and shake carefully. Red to reddish brown colour in the acid layer would indicate the presence of argemone oil.
	Mineral Oil	Take 2 ml. of edible oil and add to an equal quantity of N/2 alcoholic potash. Heat in boiling water bath for about 15 minutes and add 10 ml. of water. If there is any turbidity, it shows the presence of mineral oil.
	Castor Oil	Dissolve some oil in petroleum in a test tube and cool in ice-salt mixture. Presence of turbidity within 5 minutes indicates the presence of castor oil.
04. Hing [Asafoetida]	Soap-stone or earthy matter.	Shake with water. Soap stone or other earthy matter will settle down at the bottom.
05. Black Pepper	Dried seeds of Papaya fruits	Papaya seeds can be separated out from pepper as they are shrunken, oval in shape and greenish brown or brownish black in colour.
	Light black pepper.	Flout the sample of black pepper in alcohol. The mature black pepper berries sink while papaya seeds and light black pepper float.

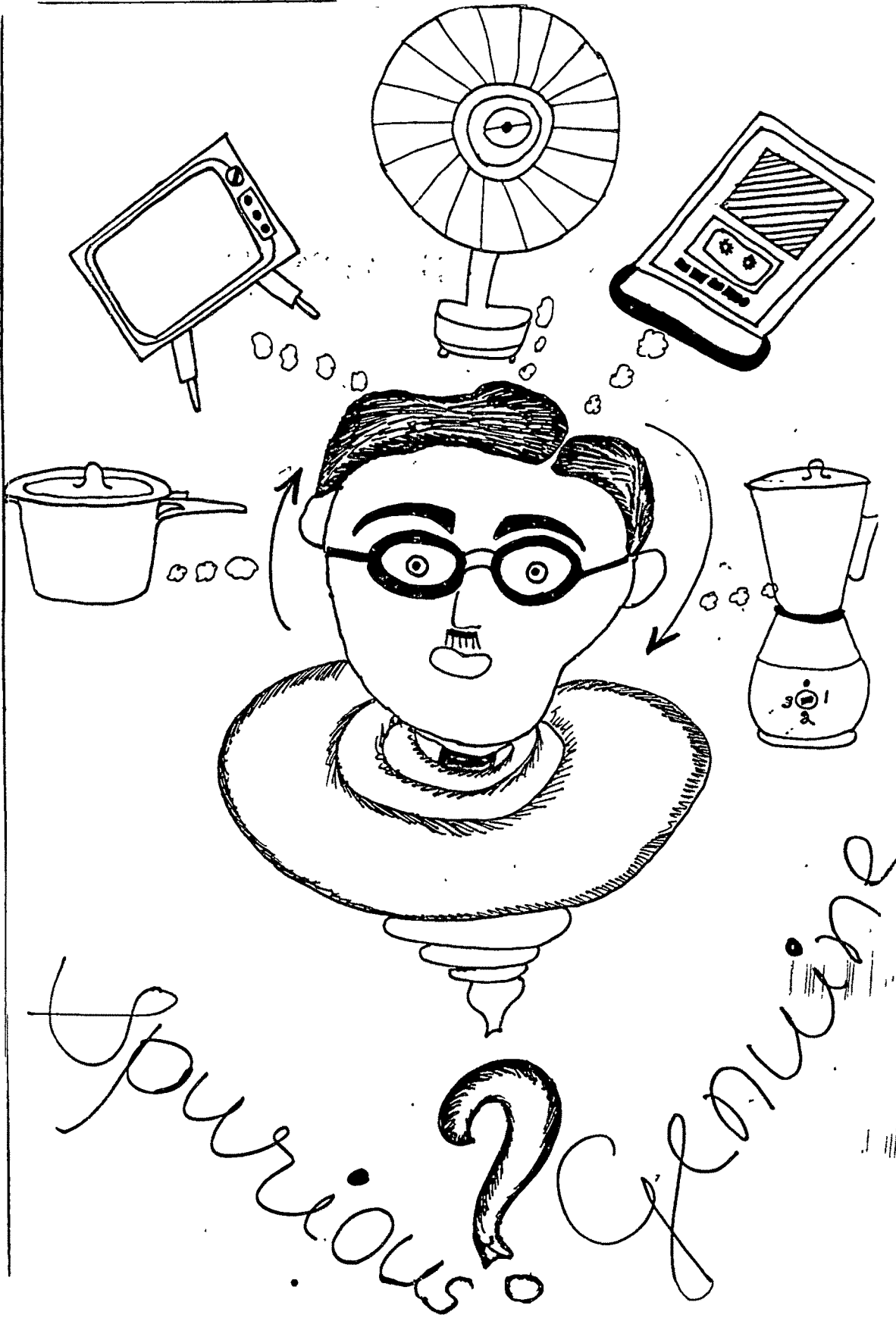


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|---------------------------|---|--|
| 06. Cardamom<br>[Elaichi] | The essential oil is removed and the pods are faced with talcum powder. | On rubbing the talcum will stick to fingers on tasting if there is hardly any aromatic flavour, it indicates removal of essential oil.   |
| 07. Chilli Powder         | Saw dust, colour, brick powder, salt or talcum powder.                  | Take a tea spoon ful of chilli powder in a glass of water. Coloured water extract will show the presence of artificial colour. Any grittiness at the bottom of the glass confirms the presence of brick powder/sand. |
|                           | Colour  | Artificial dye can be detected by sprinkling a small quantity of chilli or turmeric powder on the surface of the glass. The soluble dye will immediately start descending in colour streaks.                         |
| 08. Common salt           | White stone powdered chalk, etc.  | Stir a spoon ful sample of salt in a glass of water. The presence of chalk will make the solution white and other insoluble impurities will settle down.   |
| 09. Tea                   | Coloured used tea, gram hal hask.                                       | Sprinkle the tea on a sheet of wet filter paper. Pink or red spots on the paper show added colour.   |
| 10. Coffee powder         | Tamarind seeds powder or date seed powder.                              | Shake powder with 1% washing soda solution. Red or pink colour shows admixture with date stones and tamarind seed.   |
| 11. Cane Sugar            | White sand, suji, chalk, iron filings.                                  | Stir one tea spoon of sugar into a glass of water. Only sugar will dissolve, leaving a residue of the spurious stuff.  |

12.	Cloves	Volatile oil extracted cloves.	Exhausted cloves can be identified by its small size and shrunken appearance. The pungent taste of genuine cloves is less pronounced in exhausted cloves.
13.	Coconut Oil	Mineral Oil	Freeze. Coconut oil will freeze while mineral oil will remain liquid.
14.	Honey	Molasses, sugar [Sugar plus water]	A cotton wick dropped in pure honey when lighted with a match stick burns. If adulterated the presence of water will not allow honey to burn. If it does, it produces a crackling sound.
15.	Rawa [Suji]	Iron fillings	By moving magnet through it iron filings can be separated.
16.	Rice	Marble or other stones.	A simple test is to place a small quantity rice on the palm of the hand and gradually immerse the same in water. The stone chips will sink.
17.	Cummin seeds [Jeera]	Grass seeds coloured with charcoal dust.	Rub between hands. Fingers will turn black.
18.	Dried Coriander seeds [Sukha dhaniya]	Coloured wild variety of seeds.	When rubbed in the palm, artificial colour will stick to palms. Wild variety of seeds are harder than coriander seeds and are not easily divided into pieces between the palms.

## Sources :

1. Yojana April 16, 1980.
2. Help Prevent Food Adulteration.
3. 'Kalaberikeya Parikhsa Vidhan' - J. Mandana
4. Quick Tests for Adulterants.



Any consumer has a right to send sample of food article to a public analyst and obtain its report on payment of prescribed fee. If the food article is found adulterated, the fee paid by him is refunded.

A booklet published by the Ministry of food and civil supplies entitled 'Help Prevent Adulteration' says, "Remember it is your [consumers'] duty to report the instance of food adulteration or spurious or sub-standard drugs and cosmetics to the concerned authorities. You can protect yourself from adulteration by your wise purchasing decisions. Buy from co-operative stores [Super Bazar, Apna Bazar, etc] or reputed retail stores. As far as possible, buy packaged commodities. Ensure that the package bears the name and address of manufacturer, packer, year and month of manufacture/packing, net contents and retail price. As far as possible, buy ISI and AGMARK certified products".<sup>10</sup>

Standardisation helps the consumer to know exactly what he is paying for and protects him against sub-standard and inferior commodities. ISI certification Marks Scheme has been introduced with a view to providing consumers such assurance of conformity to Indian standards. ISI § scheme provides advantage to manufacturers in terms of better sales, better acceptance of product by consumer and a technical audit of the quality of products manufactured.

Under ISI certificate marks Act, ISI inspectors have neither the powers to search premises where misuse of ISI mark may be taking place nor the powers to seize such material. The Act prescribes a maximum punishment of fine of Rs. 10,000/- for contravention of the provisions of the Act. Absence of adequate powers to the inspectors and meagre

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§ ISI has now become a statutory corporation from 1.4.1987 as Bureau of Indian Standards.

amount of penalty are likely to prove a major hindrance in dealing with cases of misuse expeditiously. The Indian Standards Institution has suggested that items concerning public health and safety should compulsorily bear its certification mark and that erring parties should be punished with a fine of Rs. 50,000/- and or rigorous imprisonment upto one year.<sup>11</sup>

AGMARK is another symbol guaranteeing quality. AGMARK is governed by Agricultural Produce [Grading & Marketing] Act 1987. Many products like butter, ghee, spices, edible oil, honey etc. are covered by AGMARK. At present 142 products bear AGMARK.<sup>12</sup>

The consumer organisations have to create awareness among consumers. It is possible to enlighten the masses through social gatherings, exhibitions and demonstrations.

One of the ways by which misbranding and adulteration can be prevented is by teaching the consumers to destroy the empties and bottles than selling them. Empties are likely to be misused by dishonest sellers for selling duplicate and misbranded products.<sup>13</sup>

An important requirement in this regard is the development of a network of laboratories for testing the quality of products sold in the market. Consumer organisations could help in setting up of such laboratories for testing common consumer items or helping the consumers in getting these items tested through Government agencies.<sup>14</sup>

Dishonesty and inefficiency of government officials is one of the hurdles in detecting malpractices. Certifying unadulterated goods as adulterated is equally dangerous as certifying adulterated goods as unadulterated. Some samples of coffee were certified as adulterated by the laboratory in Bangalore. The same samples were found to be unadulterated by Poona laboratory.<sup>15</sup>

Following are some of the extracts taken from 'Consumers, Crimes and Law' authored by H.N.Giri.

Food inspectors may be given powers to arrest offenders and send them to judicial custody; adulteration should be made a non-bailable offence.

Each sample taken should be divided into four parts instead of three. One should be retained by the Food Inspector, the second should be sent to the Public Analyst, the third should go to the local health authority and the fourth given to the person from whom the sample has been taken.

Each district should have a fully equipped laboratory with a Public Analyst.

Mobile laboratories should be set up wherever feasible so that offenders are punished on the spot.

The Central Food Laboratory should bring out monthly magazines so as to acquaint the consumers with new methods of detecting adulteration. New centres as to teach nutritional courses be introduced. Even at school and college levels these courses dealing with socio-economic context should be oriented.

Adulteration is a health hazard and should be dealt with strictly and severely.

The Regional Food & Testing Laboratory Ghaziabad has published many brochures relating to detection of food adulteration. It has developed a small kit meant for housewives and consumer organisations to help in detecting food adulteration.

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16. Ibid.