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Simple Household Tests



For the
Detection
of

Adulterations in Foods.

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Simple Household Tests

FOR THE DETECTION OF

Adulterations in Foods.

COMPILED BY THE

Utah Dairy and Food Commission.

JOHN PETERSON, COMMISSIONER.

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Salt Lake City, Utah,

March, 1906.

PREFACE.

In presenting this little booklet, it is the aim of the Utah Dairy and Food Department to give in brief form, a number of simple tests by which the housewife, with the conveniences at hand in the kitchen, can readily and quickly determine the character of a number of the foods that are daily used on our tables. The tests are so simple that any person of average intelligence can carry them out, and the results are absolutely reliable. The Department well recognizes the fact that the housewife can be of the greatest help in preventing the sale of adulterated foods. Nearly all of the following tests have been mentioned in the last biennial report of the Department. This report, however, has only reached a limited number of individuals. The Department hopes that this little booklet will find a place in every home, and respectfully asks the co-operation of every housewife for the mutual benefit of the community.

This booklet will be sent free of charge upon applying to Utah Dairy and Food Commission,

JOHN PETERSON,

Commissioner.

Salt Lake City, Utah.

By transfer

SEP 8 1910

Simple Household Tests for the Detection of Adulterations in Foods.

MILK AND CREAM.

When milk is skimmed or watered, the fluid is of a thin bluish color. To cover this defect, which would at once reveal its inferior quality, coloring is resorted to. This may be known by letting the milk or cream stand in a clear glass, say twelve hours, and then noticing the watery and creamy layers. If the lower layer is of a yellow color, of the same shade as the cream, artificial coloring is indicated. Cream low or deficient in butter fat, may be detected in a similar way. A little vinegar added to the heated cream or milk, produces in the curd a distinct orange color if an Aniline dye has been employed to give the milk or cream an apparent richness. If Caramel or Annatto have been used, the curd will have a brownish color. The curd of pure cream or milk should be nearly white.

Formaldehyde and Other Preservatives.

Keep the milk or cream in a warm place for forty-eight hours. If the sample is still sweet at the expiration of this time, a preservative is strongly indicated.

ICE CREAM.

Ice cream should contain a reasonable amount of cream, which gives the proper richness. Instead of cream, milk thickened by gelatin or corn starch is often employed. To detect the presence of starch, add to a little of the ice cream, a few drops of Tincture of Iodine. A deep blue color is instantly developed, if corn starch or flour is present. This test is equally applicable for the detection of corn starch in cream or milk.

BUTTER.

The adulterations consist of the substitution of Renovated or Process Butter, and Oleomargarine or Butterine for the genuine article.

To distinguish the three the following simple tests are readily carried out:

A small portion of the Butter (size of a hazelnut) is placed in an ordinary table spoon and heated over a low flame (alcohol lamp, etc.) to the boiling point, stirring constantly with a toothpick or some similar article. Genuine butter boils *quietly* and produces an *abundance* of foam; renovated butter *sputters* like grease and water when boiled, and produces but *little* foam; oleomargarine acts very much like renovated butter, boiling with *considerable* noise and producing practically *no* foam. The characteristic odor of tallow also be-

comes evident when the sample in question is oleomargarine. Butter should not contain an excess of water, which is sometimes purposely incorporated. This may be known by the water oozing out *abundantly* upon the surface of the butter when cut.

CREAM OF TARTAR.

Cream of Tartar is a purified product separated during the fermentation of grape wine and is usually sold in the form of a snowy-white, inodorous powder, possessing a slight acidulous taste. The average retail price is fifty to sixty cents per pound. The adulteration of this article consists of: Gypsum, acid phosphate of lime, chalk, etc., flour being usually present also; this mixture often replaces entirely the genuine article.

A very simple test to determine the purity of Cream of Tartar is as follows: Pour *boiling* water over a little of the sample and stir. Pure Cream of Tartar dissolves *completely*, while lime, chalk and flour remain in suspension. When cold, the Cream of Tartar precipitates again as a beautiful crystalline mass. A drop of Tincture of Iodine added to the cooled solution, shows instantly by the blue color produced, the presence of flour or starchy material.

SUGAR, SALT, BAKING SODA, TARTARIC ACID, ETC.

These should dissolve *completely* in cold water. Sediment and other insoluble materials denote impurities or adulteration, as for example, a cheap grade of salt mixed with starch; an inferior sugar mixed with blueing, etc.

EXTRACT OF LEMON.

Essence or Extract of Lemon is a solution of (five per cent.) Oil of Lemon in Alcohol. To dissolve the above amount of oil, requires practically a pure alcohol, which really is the costly ingredient in an Extract of Lemon. The cheaper extracts contain only a small percentage of alcohol, but a large amount of water. In this mixture the oil will not dissolve, consequently these cheap extracts contain but little or no oil, but merely a flavor of lemon.

To determine the character of the extract:

To a wine glassful of water, add a teaspoonful of the extract in question and stir. *Milkiness* immediately results if the extract contains the proper proportion of oil (for oil and water will not mix); if a perfectly clear solution results no oil or only traces are present, thus readily identifying an inferior and cheap extract.

EXTRACT OF VANILLA.

Extract of Vanilla should be an Extract of Vanilla Bean and contain the characteristic constituents of the

bean, such as vanillin, resinous matter, oil, gum, coloring matter, etc. It is to all of these principles combined that a true Vanilla owes its characteristic sweet, delicate, fragrant odor and taste. The majority of extracts on the market are artificial preparations of artificially prepared Vanillin and Cumarin dissolved in a weak alcohol and properly colored with Caramel or Dyes, and do not cost one-tenth the price of the genuine extract.

To determine the character of the extract :

In a saucer place about one or two tablespoonfuls of the extract and set the dish over boiling water in a tea kettle. Allow the extract to evaporate one-half, then add cold water to make up to the original volume. By this treatment the alcohol has been driven off and we have nothing but a watery solution. In this watery solution, the principles of a true Vanilla are insoluble, rendering the residual liquid densely cloudy and a dirty brownish color.

The artificial extract containing none of the bean constituents will be perfectly bright and clear.

Another simple distinction is the addition of a little *Sugar of Lead* solution (note that this is poison) to the extract in question. The true Vanilla Extract immediately gives an abundant yellowish-brown precipitation and a pale yellowish-straw colored liquid. Upon an artificial extract the lead solution has little or no effect.

Only a slight precipitation results and no, *or but little*, discoloration takes place.

VINEGAR.

Vinegar is derived from cider, wine and malt and according to its source, contains more or less of the substances present in the original material. For example, cider vinegar contains certain apple constituents; the malt, constituents of the grain. By evaporating a vinegar over boiling water, a residue is obtained, which readily imparts to the senses of smell and taste the characteristics of true cider or malt. The ordinary vinegar, as found on our market, commanding only one-quarter or one-sixth the price of the former article, is a distilled product, artificially colored and contains generally, artificial flavoring. When this kind of vinegar is evaporated over boiling water the residue is very small, hard and brownish and practically inodorous. The residue from the cider or malt vinegar usually contains numerous air bubbles and is soft or semi-solid in consistency.

COFFEE.

Coffee was formerly adulterated extensively with Chickory, but very much less so at present date. Take a tumblerful of cold water and add the coffee grains or the ground coffee. Genuine coffee will float and *not* impart a distinct color to the water for *several minutes*

Chickory, cereals, and other adulterants will sink and settle to the bottom, leaving brown trails of color as they sink.

SPICES.

Spices owe their value to constituents, which, as a rule, are characteristically prominent to the odor and taste; hence, these two physical tests are valuable indicators of the quality of a particular spice. For example: If your cloves do not possess a strong clove odor and taste, the sample has been exhausted and deprived of its valuable constituent, the clove oil. If your pepper does not possess the prominent pepper odor and taste, the sample is an inferior article and probably mixed with some worthless adulteration.

BORAX.

Borax, while not a food, is now used extensively as a household article and costs about fifteen to twenty cents per pound. The cheap Sal Soda and Bicarbonate of Soda are sometimes mixed with the borax or entirely substituted for it. To detect adulteration add to the suspected sample, in a saucer, one or two tablespoonfuls of vinegar. Pure borax gives no change; if Sal or Bicarbonate of Soda is present, abundant effervescence or fizzing immediately takes place.

ANILINE DYES.

These are extensively used to impart a brilliant color to various articles of food. The detection is comparatively simple and requires a little wool, vinegar and ammonia. Mix a portion of the sample to be tested with enough water to make a thin paste, in an agate pan, and put in a piece of woolen cloth a few inches square, or a little Nuns Veiling, or some white wool. Whatever wool is used, same should have been wet thoroughly with boiling water. Boil the paste containing the wool for about ten minutes, stirring the mixture frequently with a small wooden stick. Remove the wool and wash it with hot or cold water. The wool will be *brightly* colored if a dye has been used; a dull brownish or pinkish color is imparted by the natural color of the fruit.

This color may be further tested by boiling the wool in water, to which a little household ammonia has been added. After boiling five minutes or more, remove the wool and if Aniline dye was present, it is now held in solution in the water by the ammonia. The vegetable color is practically destroyed. To the ammonia solution now add enough vinegar (about a cupful) to give distinct vinegar odor and now add a new portion of wool. Boil again and the second piece of wool will be dyed a brilliant color if an aniline dye was present. The above test would apply to all food products artificially

colored, such as ketchups, jams, jellies, preserves, sausage, soda, syrups, lemonade, extracts, etc.

PRESERVATIVES.

Preservatives are used in various articles of food, especially those which "spoil" or ferment readily; such as milk, cream, cider, grape juice, ketchups, sausage, etc.

Suspicion of a preservative may be inferred if the article of food is kept in a warm place for forty-eight to seventy-two hours *without* souring, fermenting or spoiling.

Appearance, Odor, Taste.

These often afford a valuable clue to the character of foods:

A *bright green* color in canned peas, beans, etc., indicates strongly the presence of copper or iron.

A *brilliant red* color in catsups, sauces, jams, jellies, fruit, canned tomatoes, etc., indicates the presence of (usually) an Aniline dye.

A *bright yellow color* in powdered and prepared mustard, extract of lemon, noodles, etc., shows artificial coloring which generally proves to be an Aniline color.

Abnormally white color in canned corn and other foods indicate that bleaching agents have been used.

Odor and Taste.

A *peculiar* sweetish taste in canned corn, peas, cat-sups, grape juice, cider, jams, jellies, fruits is an indication of Saccharine or Coal Tar Sugar.

A *very prominent* odor, readily distinguished by a little experience from the genuine, enables one to detect an artificial extract, especially strawberry, raspberry and pineapple.

Absence or *weakness* of the characteristic aromatic odor and taste in all spices denotes an inferior, exhausted or adulterated article.

THE LABELING OF FOODS.

The labeling of foods often gives an indication of its character. A pure food worthy of the name, always bears the name of the manufacturer and place of business. An imitation or adulterated article often bears no label or manufacturer or locality, or else some fictitious firm. For example: Loubon Olive Oil, Durand Olive Oil—no company or country stated.

An Alum Baking Powder, unless compelled by law, does not state its ingredients upon the label, while invariably a Cream of Tartar Powder informs the consumer of its character. Salad Oil is usually nothing but the cheap Cottonseed Oil. A butter, labeled "Choice Sunbeam Creamery Butter" or other fanciful name, without the manufacturers' name, will prove in

nearly every instance to be the Renovated Article or more likely Oleomargarine.

PRICE OF FOODS.

The price of an article is often an indication of its character, because nearly all foods have specific values. For example: Baking Powder retailing for twenty-five cents for a pound can, cannot be a Cream of Tartar Powder, nor can a pint of Olive Oil retailing for a quarter, be the genuine article. Only inferior, damaged or adulterated goods are, as a rule, sold below the market price.

ADULTERATING FOOD.

Section 27. Every person who adulterates or dilutes any article of food, or any article used in compounding them, with a fraudulent intent to offer same, or cause or permit it to be offered, for sale as unadulterated or undiluted, and every person who sells, or keeps, or offers for sale, the same, as unadulterated or undiluted, is guilty of a misdemeanor.

"ADULTERATED" DEFINED.

Sec. 29. That for the purpose of this act, an article shall be deemed adulterated, in the case of food or drink:

First—If any substance or substances has or have

been mixed and packed with it, so as to reduce or lower or injuriously affect its quality or strength, so that such product, when offered for sale, shall deceive or tend to deceive the purchaser.

Second—If any substance or substances has or have been substituted wholly or in part for the article, so that the product when sold, shall deceive or tend to deceive the purchaser.

Third—If any valuable constituent of the article has been wholly or in part abstracted, so that the product when sold shall deceive or tend to deceive the purchaser.

Fourth—If it be an imitation of, or sold under the specific name of any other article.

Fifth—If it be mixed, colored, coated, powdered, polished, or stained in a manner whereby damaged or inferiority is concealed, so that such product when sold shall deceive or tend to deceive the purchaser.

Sixth—If it contain any added poisonous ingredient, or any ingredient which may render such article injurious to the health of the person consuming it.

Seventh—If it be labeled or branded so as to deceive or mislead the purchaser.

Eighth—If it consists of the whole or part of a diseased, filthy, decomposed, or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not; or if it is the pro-

duct of a diseased animal, or of an animal that has died otherwise than by slaughter.

UNWHOLESOME FOOD.

Sec. 31. It shall be unlawful for any person to knowingly sell, or keep, or offer for sale, any article of food, knowing that the same has become tainted, decayed, spoiled, or otherwise unwholesome or unfit to be eaten or drunk.

Penalty.

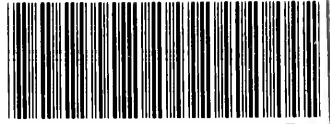
Any person who shall violate any provision of this act, or who shall misbrand any package, containing any article of food, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than ten, nor more than one hundred dollars, and any article of food found in his possession in violation of any provision of this act shall be subject to confiscation and spoliation.

NOTE.—Under the statute a dealer is liable for selling an adulterated article, although he may have no knowledge that the same is adulterated.

A guarantee of purity received from the manufacturer or jobber does not relieve a person handling adulterated goods from liability.



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