Rayat Shikshan Sansthas

Rajarshi Chhatrapati Shahu College Kolhapur

Department of Botany

WALL PAPER

Sr No	Topic of Wall paper	Name of Students	Class
1	Detect Adulteration in Milk and Milk Product	Miss. Ware Trupti Krushnat	B.Sc-II
2	Detect Adulteration in Beverages	Miss. Thakur Kajal Bajrang	B.Sc-III
3	Detect Adulteration in Fruits & Vegetables	Mr. Kamble Krishna Laxman	B.Sc-III
4	Detect Adulteration in salts, Spices & Condiments	Mr.Shivputra Kempayya Hanchinwar	B.Sc-III
5	Detect Adulteration in Food Grain & Its Product	Mr. Kamble Pranam Kerba	B.Sc-III
6	Detect Adulteration in Sugar & Confectionery	Mr. Yesare Aniruddha Baban	B.Sc-III
7	Detect Adulteration in Oils & Fats	Miss. Suryawanshi Supriya Tukaram	B.Sc-III

Detect Adulteration
in
Milk and Milk Product

Name:Ware Trupati

Class:B.Sc-II

Detection of water in milk

Testing method:

1. Put a drop of milk on a polished slanting surface.
2. Pure milk either stays or flows slowly leaving a white trail behind.
3. Milk adulterated with water will flow immediately without leaving a mark.

Pure milk

Adulterated milk

Detection of detergent in milk

Testing method:

1. Take 5 to 10ml of sample with an equal amount of water.
2. Shake the contents thoroughly.
3. If milk is adulterated with detergent, it forms dense lather.
4. Pure milk will form very thin foam layer due to agitation..

Pure milk

Adulterated milk

Detection of starch in milk and milk products (khoya, chenna, paneer)

Testing method:

1. Boil 2-3 ml of sample with 5ml of water.
2. Cool and add 2-3 drops of tincture of iodine.
3. Formation of blue colour indicates the presence of starch.
   (In the case of milk, addition of water and boiling is not required)

Pure milk

Adulterated milk

Detection of mashed potatoes, sweet potatoes and other starches in ghee/butter

Testing method:

1. Take ½ teaspoon of ghee/butter in a transparent glass bowl.
2. Add 2-3 drops of tincture of iodine.
3. Formation of blue colour indicates the presence of mashed potatoes, sweet potatoes and other starches.

Pure

Adulterated

Detect Adulteration in Beverages

Name: Thakur Kalal Bajrang

Class:B.Sc-III (Botany)

Detection of clay in coffee powder

Testing method:

1. Add ½ teaspoon of coffee powder in a transparent glass of water.
2. Stir for a minute and keep it aside for 5 minutes. Observe the glass at the bottom.
3. Pure coffee powder will not leave any clay particles at the bottom.
4. If coffee powder is adulterated, clay particles will settle at the bottom.

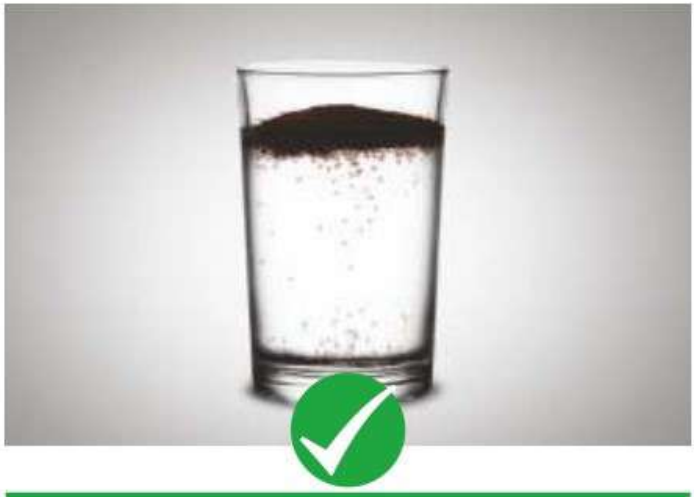
Pure

Adulterated

Detection of chicory powder in coffee powder

Testing method:

1. Take a transparent glass of water.
2. Add a teaspoon of coffee powder.
3. Coffee powder floats over the water but chicory begins to sink.



Pure

Adulterated

Detection of exhausted tea in tea leaves

Testing method - 1:

1. Take a filter paper and spread few tea leaves.
2. Sprinkle with water to wet the filter paper.
3. Wash the filter paper under tap water and observe the stains against light.
4. Pure tea leaves will not stain the filter paper.
5. If coal tar is present, it will immediately stain the filter paper.

Testing method - 2:

1. Take small amount of tea leaves/ dust and place it in the centre of a filter paper.
2. Add water drop by drop at the heap of the tea leaves/ dust.
3. If the tea is adulterated with a coloured tea, water will dissolve the added colour and leave streak of colour in the filter paper.

Pure

Adulterated

Testing method - 3:

1. Spread a little slaked lime on white porcelain tile or glass plate
2. Sprinkle a little tea dust on the lime.
3. Red, orange or other shades of colour spreading on the lime will show the presence of coal tar colour.
4. In case of genuine tea, there will be only a slight greenish yellow colour due to chlorophyll, which will appear after some time.

Detection of iron filings in tea leaves

Testing method:

1. Take small quantity of tea leaves in a glass plate.
2. Move the magnet through the tea leaves.
3. Pure tea leaves will not show any iron filings on the magnet.
4. If adulterated, then iron filings will be seen on the magnet.

Pure

Adulterated

Detect Adulteration in Fruits & Vegetables

Name: Kamble Krishna Laxman

Class:B.Sc-III (Botany)

Detection of malachite green in green vegetables like bitter gourd, green chilli and others.

Testing method - 1:

1. Take a cotton piece soaked in water or vegetable oil. (conduct the test separately)
2. Rub the outer green surface of a small part of green vegetable/chilli.
3. If the cotton turns green, then it is adulterated with malachite green.

Pure

Adulterated

Testing method - 2:

1. Take a small part of the sample and place on a piece of moistened white blotting paper.
2. The impression of colour on the paper indicates the use of malachite green, or any other low priced artificial colour.

Green Vegetables

Malachite Green

Detection of artificial colour on green peas

Testing method:

1. Take little amount of green peas in a transparent glass.
2. Add water to it and mix well.
3. Let it stand for half an hour.
4. Clear separation of colour in water indicates adulteration.

Pure

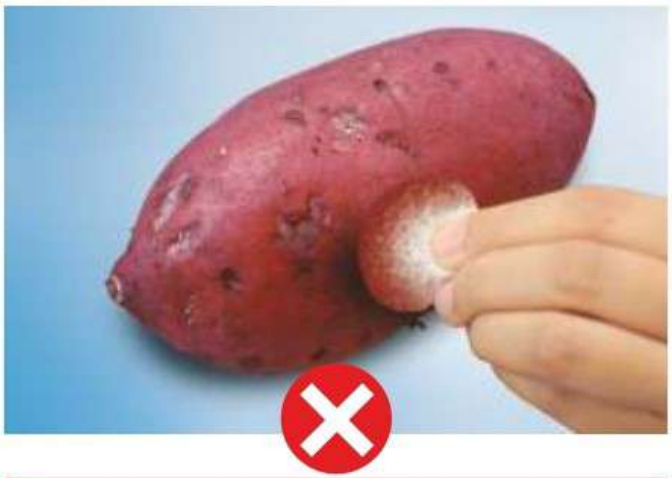
Adulterated

Detection of rhodamine B in sweet potato

Testing method:

1. Take a cotton ball soaked in water or vegetable oil. (conduct the test separately)
2. Rub the outer red surface of the sweet potato.
3. If cotton absorbs colour, then it indicates the usage of rhodamine B for colouring the outer surface of sweet potato.

Pure



Adulterated

Detect Adulteration
in
Salts, Spices & Condiments

Name: Shivputra Kempayya Hanchinwar

Class:B.Sc-III (Botany)

Detection of foreign resin in asafoetida (hing)

Testing method-1:

1. Burn small quantity of asafoetida in a stainless steel spoon.
2. Pure asafoetida will burn like camphor.
3. Adulterated asafoetida will not produce bright flame like camphor.

Pure

Adulterated

Testing method-2:

1. Powder a gram of asafoetida and take it in a glass container.
2. Add one tea spoon of water. Mix thoroughly by shaking.
3. Milky white solution with no sediments represents pure asafoetida.

Asafetida

Non-Edible Gum/Resin

Detection of papaya seeds in black pepper

Testing method - 1:

1. Add some amount of black pepper to a glass of water.
2. Pure black pepper settles at the bottom.
3. In the adulterated black pepper, papaya seeds float on the surface of water.

Black pepper

Papaya seeds

Detection of papaya seeds in black pepper

Testing method - 2:

1. Spread spice on a white paper.
2. Observe the appearance of the sample using the magnifying glass.
3. Black pepper is brown in colour. It has a wrinkled surface and has a characteristic smell and pungent taste.
4. The papaya seeds have shrunken smooth surface and oval shape. It is greenish brown or blackish brown in colour and has a repulsive flavour.

Black pepper

Papaya seeds

Detection of light black berries in black pepper

Testing method

1. Press the berries with the help of fingers.
2. Light berries will break easily while black berries of pepper will not break.

Black pepper

Light black berries

Detection of soap stone or other earthy matter in asafoetida (hing)

Testing method:

1. Shake little portion of the sample with water and allow to settle.
2. Pure asafoetida will not leave any soap stone or other earthy matter at the bottom.
3. If asafoetida is adulterated, soap stone or other earthy matter will settle down at the bottom.

Pure

Adulterated

Detection of artificial/water soluble synthetic colours in chilli powder

Testing method:

1. Sprinkle chilli powder on the surface of water taken in a glass tumbler.
2. The artificial colourants will immediately start descending in colour streaks.

Pure

Adulterated

Detection of light black berries in black pepper

Testing method:

1. Float the sample of black pepper in alcohol (rectified spirit).
2. The mature black pepper berries sink while the light black pepper floats.

Black pepper

Light black berries

Detection of saw dust in chilli powder

Testing method:

1. Add the sample to water.
2. The saw dust will float at the surface of water while Chilli powder will settle down in bottom.

Chilli powder

Saw dust

Detection of starch in asafoetida

Testing method:

1. Tincture of iodine is added to the sample of asafoetida.
2. Appearance of blue colour shows the presence of starch.

Asafoetida

Starch

Detection of chalk in common salt

Testing method:

1. Stir a spoonful of sample of salt in a glass of water.
2. The presence of chalk will make solution white and other insoluble impurities will settle down.

Common salt

Chalk

Detection of exhausted cloves in cloves

Testing method:

1. Take some water in a glass and put cloves.
2. Genuine cloves will settle down at the bottom while exhausted cloves will float on surface.

Cloves

Volatile oil extracted cloves

Detection of cassia bark in cinnamon

Testing method:

1. Take small quantity of cinnamon in a glass plate.
2. If adulterated, on close visual examination, cassia bark that comprises of several layers in between the rough outer and inner most smooth layers can be differentiated from cinnamon.
3. Cinnamon barks are very thin that can be rolled around a pencil or pen. It has a distinct smell.

Cinnamon

Cassia

Detection of grass seeds coloured with charcoal dust in cumin seeds

Testing method:

1. Rub small amount of cumin seeds on palms.
2. If palms turn black, adulteration is indicated.

Pure

Adulterated

Detection of argemone seeds in mustard seeds

Testing method:

1. Take small quantity of mustard seeds in a glass plate.
2. Examine visually for the argemone seeds.
3. Mustard seeds have a smooth surface and when pressed, inside it is yellow in colour.
4. Argemone seeds have grainy, rough surface and are black in colour. When pressed, it is white in colour from inside.

Mustard seeds

Argemone seeds

Detection of lead chromate in turmeric whole

Testing method:

1. Add small quantity of turmeric whole in a transparent glass of water.
2. Pure turmeric will not leave any colour.
3. Adulterated turmeric appears to be bright in colour and leaves colour immediately in water.

Pure

Adulterated

Detection of artificial colour in turmeric powder

Testing method:

1. Add a teaspoon of turmeric powder in a glass of water.
2. Natural turmeric powder leaves light yellow colour while settling down.
3. Adulterated turmeric powder will leave a strong yellow colour in water while settling down.

Pure

Adulterated

Detection of sawdust and powdered bran in powdered spices

Testing method:

1. Sprinkle powdered spices on the water surface.
2. Pure spices will not leave any saw dust/powdered bran on the surface of water.
3. If spices are adulterated, saw dust/powdered bran will float on the surface.

Pure

Adulterated

Differentiation of common salt and iodised salt

Testing method:

1. Cut a piece of potato, add salt and wait for a minute.
2. Add two drops of lemon juice.
3. If it is iodised salt, blue colour will develop.
4. In the case of common salt, there will be no blue colour.

Iodised salt

Common salt

Detection of coloured dried tendrils of maize cob in saffron

Testing method:

1. Genuine saffron will not break easily like artificial. Artificial saffron is prepared by soaking maize cob in sugar and colouring it with coal tar.
2. Take a transparent glass of water and add small quantity of saffron.
3. If saffron is adulterated, the artificial colour dissolves in water rapidly. A bit of pure saffron when allowed to dissolve in water will continue to give its saffron colour so long as it lasts.

Saffron

Coloured tendrils

Detect Adulteration in Food Grains & Its Products

Name: Kamble Pranam Kerba

Class:B.Sc-III (Botany)

Detection of extraneous matter (dust, pebble, stone, straw, weed seeds, damaged grain, weeviled grain, insects, rodent hair and excreta) in food grains

Testing method:

1. Take small quantity of sample in a glass plate.
2. Examine the impurities visually.
3. Pure food grains will not have any such impurities.
4. Impurities are observed visually in adulterated food grains.

Pure

Adulterated

Detection of dhatura in food grains

Testing method:

1. Take small quantity of food grains in a glass plate.
2. Examine the impurities visually.
3. Dhatura seeds which are flat with edges and blackish brown in colour can be separated out by close examination.

Dhatura seeds in food grains

Dhatura seeds

Detection of excess bran in wheat flour

Testing method:

1. Take a transparent glass of water.
2. Sprinkle a spoon of wheat flour on the surface of water.
3. Pure wheat flour will not show excess bran on water surface.
4. Adulterated wheat flour shows excess bran floating on water surface.

Pure wheat flour

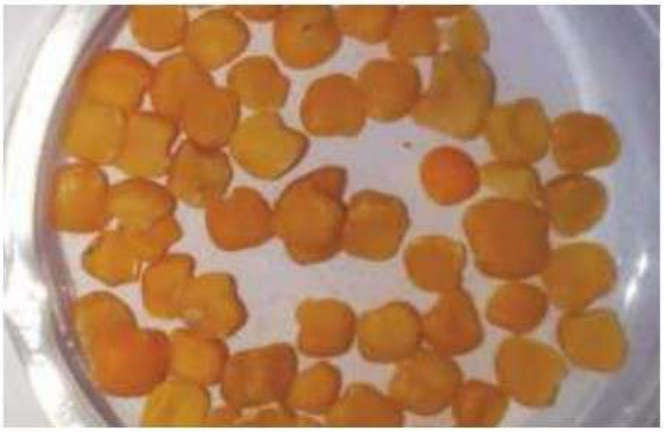
Excess bran in wheat flour

Detection of khesari dal in dal whole and split

Testing method:

1. Take small quantity of dal whole or split in a glass plate.
2. Examine the impurities visually.
3. Khesari dal which has edged type appearance showing a slant on one side and square in appearance can be separated out by close examination.
4. Pure dal will not have any such impurities.

Pure dal



Khesari dal

Detection of added colour in food grains

Testing method:

1. Take a transparent glass of water.
2. Add 2 teaspoons of food grains and mix thoroughly.
3. Pure food grains will not leave any colour.
4. Adulterated food grains leaves colour immediately in water.

Pure

Adulterated

Detection of turmeric in sella rice

Testing method:

1. Take a tea spoon of rice in a glass plate.
2. Sprinkle a small amount of soaked lime
   (commonly known as chuna which is used in pan) on the rice grains.
3. Pure grains will not form red colour.
4. Adulterated grains will form red colour.

Pure

Adulterated

Detection of rhodamine B in ragi

Testing method:

1. Take cotton ball soaked in water or vegetable oil. (conduct the test separately)
2. Rub the outer surface of the ragi.
3. If cotton absorbs colour, then it indicates the adulteration of rhodamine B for colouring the outer surface of ragi.

Pure

Adulterated

Detection of chakunda beans in pulses

Testing method:

1. Take small quantity of pulses in a transparent glass plate.
2. Examine the impurities visually.
3. Chakunda beans can be separated out by close examination.

Chakunda beans

Detection of sand, soil, insects, webs, lumps, rodent hair and excreta in Atta, Maida, Suji (Rawa)"

Testing method:

1. These can be identified by visual examination.

Atta, Maida, Suji (Rawa)

Sand, Soil, insects, webs, lumps, rodent hair and excreta

Detect Adulteration in Sugars & Confectionery

Name: Yesare Aniruddha Baban

Class:B.Sc-III (Botany)

Detection of sugar solution in honey

Testing method - 1:

1. Take a transparent glass of water.
2. Add a drop of honey to the glass.
3. Pure honey will not disperse in water.
4. If the drop of honey disperses in water, it indicates the presence of added sugar.

Pure

Testing method - 2:

1. Take a cotton wick dipped in a pure honey and light with a match stick.
2. Pure honey will burn.
3. If adulterated, the presence of water will not allow the honey to burn if it does; it will produce a cracking sound.

Adulterated

Detection of chalk powder in sugar/pithi sugar/jaggery

Testing method:

1. Take a transparent glass of water.
2. Dissolve 10g of sample in water.
3. If sugar/pithi sugar/jaggery is mixed with chalk, the adulterant will settle down at the bottom.

Pure

Adulterated

Detection of aluminium leaves in silver leaves

Testing method:

1. Take some portion of the leaf and crush it between two fingers.
2. Pure silver leaves will be easily crushed and crumble to the powder form while aluminium leaves will only break into smaller shreds.
3. Further take the suspected silver leaves and make it in the form of a ball and burn it with the help of a flame.
4. Pure silver leaves burn away completely leaving glistening balls while aluminium leaves are reduced to grey ash.

Silver leaves

Aluminium leaves

Silver leaves

Aluminium leaves

Detect Adulteration in Oils & Fats

Name: Suryawanshi Supriya Tukaram

Class:B.Sc-III (Botany)

Detection of other oils in coconut oil

Testing method:

1. Take coconut oil in a transparent glass.
2. Place this glass in refrigerator for 30 minutes. (Do not keep in the freezer)
3. After refrigeration, coconut oil solidifies.
4. If coconut oil is adulterated, then other oils remain as a separate layer.

Pure

Adulterated

Detection of TOCP (Tri-Ortho-Cresyl-Phosphate) in oils and fats

Testing method:

1. Take 2ml of sample of oil.
2. Add on a little amount of yellow butter (Solid).
3. Immediate formation of red colour indicates the presence of TOCP.

Pure

Adulterated

Proper winterization of refined winterized salad oils

Testing method:

1. Take 100ml sample oil in bottle, cork tightly and seal with paraffin.
2. The bottle is completely submerged in bucket containing finely cracked ice and water is added until it rises to top of the bottle.
3. The bucket is kept filled solidly with ice by removing any excess water and adding ice when necessary.
4. After 5.5hours remove the bottle and examine oil.
5. If it is properly winterised, sample will be brilliant, clear and limpid.

Refined winterized salad oils