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# NIFA IRON SPOT TEST KIT

**Pakistan Atomic Energy Commission**

**Nuclear Institute for Food and Agriculture (NIFA), Peshawar**

**Food & Nutrition Division**

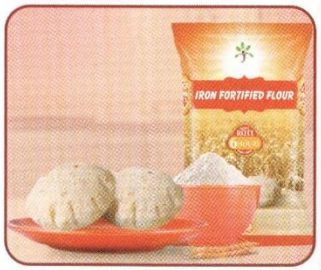
Iron is an essential micronutrient required for immune system, healthy skin, hair & nails and infant's growth and development. It is an integral part of hemoglobin (Red Blood Cells (RBC's) which is responsible for transport of oxygen in the body. Major sources of iron include liver, red meat, beans, nuts, dried fruits, fortified breakfast cereals and soybean flour. The Recommended Daily Allowance (RDA) for elemental iron depends on a person's age and sex e.g. infants (0.27-11mg), children (7-10mg), males (8-11mg), females (8-15mg) and pregnant/lactating women (10-27mg)

Iron deficiency causes 'anemia' which results in stunted growth due to low production of Red Blood Cells (RBCs). According to National Nutrition Survey (NNS), 2019, prevalence of Iron Deficiency Anemia (IDA) in Pakistani population is 28.6% with a slightly higher proportion among boys than girls

## Preventive Measures

To prevent IDA, iron rich foods should be consumed. Fortification of commonly consumed food vehicles e.g. wheat flour, rice etc. with iron can also be an effective way to minimize iron deficiency.

To facilitate the detection of iron fortification in fortified wheat flour, NIFA iron spot test kit has been developed




## NIFA Spot Test Kits

Food & Nutrition Division (FND) of NIFA, Peshawar has developed different qualitative testing kits such as iron, vitamin-A, iodine and POV Spot Test Kits to ensure food safety and quality.


NIFA Iron Spot Test Kit


NIFA Vitamin-A Spot Test Kit


NIFA Iodine Spot Test Kit


NIFA POV Spot Test Kit

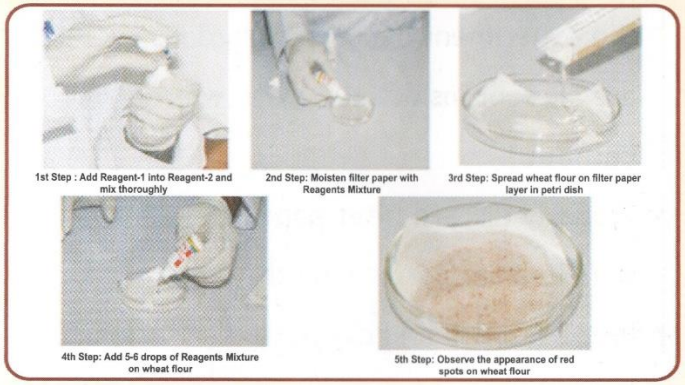
## Characteristics of Iron Spot Test Kit

**Composition:**

01 Spot Test Kit consists of 2 plastic bottles of blue (reagent-1) and red (reagent-2) color

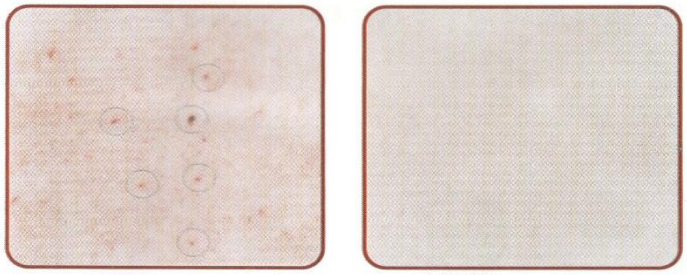
## How to Use?

- Mix reagent-1 and reagent-2 properly to make a homogenous mixture.
- Place a piece of filter paper in a petri dish and moist it with 4-5 drops of mixture.
- Spread a thin layer of sample on filter paper.
- Pour some drops of mixture on the sample and wait for 30 seconds to observe the color development.
- Red spots indicate the presence of fortified iron in the sample and vice versa




## Test Chart

Appearance of red spots indicate the presence of iron in wheat flour



**Iron Present** **Iron Not Present**

## Testing Capacity/Kit

Approximately 30-35 tests can be performed by using 1 spot test kit.

## Shelf Life

Shelf life of NIFA Iron Spot Test Kit is 1 year before opening/mixing of reagents while a kit should be used within 15 days after opening/mixing of reagents.

## Precautions

- Use disposable gloves and face mask during the experiment because hazardous chemicals are present inside kit bottles which can be harmful.
- Properly discard filter paper and flour sample after performing the test.
- Properly wash and dry petri dish for next test.
- Wash your hands with soap after performing the test.
- Always keep the reagents tightly packed

## Benefits of Iron Spot Test Kit

- Quality Assurance during processing, usage and storage of wheat flour
- Help food authorities to monitor and enforce the food fortification standards
- Economical, rapid and easy to use
- No need of trained personnel to use kit

## End Users

- Wheat flour milling industries of Pakistan
- National food fortification alliance
- Provincial food regulatory authorities
- International NGOs working on nutrition in pakistan

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