FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA
Inspiring Trust, Assuring Safe & Nutritious Food
Ministry of Health and Family Welfare, Government of India

RCD-02005/10/2024-Regulatory-FSSAI-Part(2) [E-13796]

भारतीय खाद्य सुरक्षा और मानक प्राधिकरण
(खाद्य सुरक्षा और मानक अधिनियम, 2006 के तहत स्थापित एक वैधानिक प्राधिकरण)
(नियामक अनुपालन प्रभाग)
एफडीए भवन, कोटला रोड, नई दिल्ली-110002

Dated: 16 May, 2025

To,

1. The Commissioner of Food Safety of All Sates/UTs
2. All Regional Directors of FSSAI

Subject: Monitoring the Sale of Fresh Fruits for use of Unauthorized or Prohibited Artificial Ripening Agents – Regarding

Madam/Sir,

It is to mention that ensuring of food safety and quality is a collective responsibility shared by all stakeholders across the food supply chain—including regulators, food business operators and consumers. Each has a vital role in upholding the integrity of the food products available in the country.

2. Fruits—particularly mangoes, which are widely consumed and commonly subject to artificial ripening—are now abundantly available for sale in the market. In an attempt to accelerate the ripening process and meet growing consumer demand, there is a heightened risk that some Food Business Operators (FBOs) may resort to using unauthorized or prohibited chemical agents such as Calcium Carbide/ Acetylene gas etc., for artificial ripening—an illegal and unsafe practice.

3. It has been observed that calcium carbide, commonly referred to as "masala," is still being used by some FBOs for the artificial ripening of fruits such as mangoes, bananas, and papayas due to its low cost and maintenance. However, its use as a ripening agent is prohibited under Regulation 2.3.5 of the Food Safety and Standards (Prohibition and Restrictions on Sales) Regulations, 2011. The use of calcium carbide for ripening poses serious health hazards to consumers as it can cause mouth ulcers, gastric irritation and even cancer due to its carcinogenic properties.

4. Furthermore, it has come to notice that certain FBOs are engaging in the practice of dipping fruits in ethephon solution for artificial ripening of bananas and other fruits. In this regard, FSSAI's "Guidance Note on "Artificial Ripening of Fruits Ethylene gas - A Safe Fruit Ripener" clearly states that ethephon may be used as a source for generating ethylene gas only if used in accordance with the prescribed Standard Operating Procedure (SOP). The SOP strictly prohibits any direct contact between ethylene (in powder or liquid form) and the fruits/Vegetables. This Guidance document outlining all aspects of the artificial ripening process using ethylene gas is available at the following link: [https://fssai.gov.in/upload/uploadfiles/files/Guidance_Note_Ver2_Artificial_Ripening_Fruits_03_01_2019_Revised_10_02_2020.pdf].

In addition to this, the prevalence of other malpractices such as colouring or coating of fruits with synthetic colours or non-permitted wax has also been observed by the Authority.

5. In view of the above, all Commissioners of Food Safety of States/UTs and Regional Directors of FSSAI are requested to intensify inspections and maintain strict vigilance over fruit markets/mandis within their respective jurisdictions. Special enforcement drives may also be undertaken to curb the illegal use of calcium carbide or other non-permitted ripening

agents/wax and synthetic colours.

6. These enforcement drives should also cover godown where seasonal fruits are stored, particularly those where substances like "masala" are suspected to be used for ripening. The presence of calcium carbide on the premises or stored alongside crates of fruits may serve as circumstantial evidence against the FBO, indicating involvement in the artificial ripening of fruits using prohibited substances. This may serve as grounds for initiating prosecution under Section 59 to be read with Section 3(1)(zz)(iii) or Section 3(1)(zz)(vii) of the FSS Act, or any other applicable provision, for the sale of unsafe food products.

7. In addition to the actions mentioned above, the Enforcement Official may also use strip paper tests (procedure enclosed) to detect the presence of acetylene in godowns or ripening chambers for the artificial ripening of fruits.

यह सक्षम प्राधिकारी की स्वीकृति से जारी किया गया है।

(राकेश कुमार)
निदेशक (नियामक अनुपालन)

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1. PA to CEO, FSSAI
2. ED(CS), FSSAI
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DETECTION OF ACETYLENE IN GODOWN OR TREATMENT CHAMBER FOR DETECTION OF ARTIFICAL RIPENING OF FRUITS

Presence of acetylene in the closed room or treatment chamber can be detected by keeping filter paper strips dipped in reagent solution. Turning the colour of filter paper strip to red brown or brown violet indicates the presence of acetylene.

REAGENTS

1. Solution 1: 1.5 g. of cupric chloride and 3 g of ammonium chloride in 20 ml. concentrated ammonia, dilute to 50 ml. with water.

2. Solution 2: 5 g. of hydroxylamine hydrochloride in 50 ml water.

3. Reagent solution: Mix one ml of solution 1 and 2 ml. of solution 2.

PROCEDURE

Dip the Whatman No. 1 filter paper strips in reagent solution and expose them to the atmosphere at the godown. Turning of filter paper strip to red-brown or brown-violet indicates the presence of acetylene gas.

The same principle could be used for quantitative determination of acetylene. Since no residue is left on/in the fruit, it is not possible to carry out the test on the fruit. The qualitative test could be performed at godown level.

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