

Module -34: Quality of Spices

34.1 Grinding: Quality of Spices

This Code of Hygienic Practice applies to spices and dried aromatic plants-whole, broken, ground or blended. It covers the minimum requirements of hygiene for harvesting, post harvest technology (curing, bleaching, drying, cleaning, grading, packing, transportation and storage including microbial and insect dis-infestation) processing establishment, processing technology (grinding, blending, freezing and freeze drying etc.) packaging and storage of processed products.

34.2 Control of Infestation by Insects and Mites

Spices should be stored in such a manner that infestation can be controlled by such methods as anaerobic or refrigerated storage or fumigation prior to storage. Stored spices should be inspected regularly and, if infested, fumigated by appropriate methods. If necessary, affected spices may be removed for fumigation. In this case, the storage areas should be cleaned and disinfected separately.

34.3 Storage and Transport of the Ground Product

Spice products should be stored and transported under conditions that maintain the integrity of the container and the product within it. Carriers should be clean, dry, weatherproof, and free from infestation and sealed to prevent water, rodents or insects from reaching the products. Spice products should be loaded, transported and unloaded in a manner that protects them from any damage or water. Well insulated carriers or refrigerated vehicles are recommended for transport when climatic conditions indicate such a need. Extreme care should be taken to prevent condensation when unloading spice products from a refrigerated vehicle or while taking out of a cold storage. In warm, humid weather, the spices should be allowed to reach ambient temperature before exposure to external conditions; this may require 1-3 days. Spices that have been spilled are vulnerable to contamination and should not be used as food.

34.3.1 End-Product Specifications

When tested by appropriate methods of sampling and examination, the products:

- (a) Should be free from pathogenic micro-organisms in levels that may represent a hazard to health.
- (b) Should not contain any substances originating from micro-organisms, particularly aflatoxins, in amounts that exceed the tolerances or criteria established by the Codex Alimentarius Commission or, where these do not exist, by the official agency having jurisdiction.
- (c) Should not contain levels of insect, bird or rodent contamination that indicate that spices have been prepared, packed or held under unsanitary conditions.

- (d) Should not contain residues resulting from the treatment of spices in excess of levels Established by the Codex Alimentarius Commission or, where these do not exist, by the official agency having jurisdiction.
- (e) Should comply with the provisions for food additives, contaminants, and with maximum levels for pesticide residues established by the Codex Alimentarius Commission or, where these do not exist, by the official agency having jurisdiction.
- (f) Ready-to-eat spices shall be free from Salmonella when ten samples of 25 g are analyzed by appropriate methods of examination.

34.4 Hygienic Requirements in the Production of Spices

1. Unsuitable Growing or Harvesting Areas

Spices should not be grown or harvested where the presence of potentially harmful substance would lead to an unacceptable level of such substances in the final product.

2. Cleaning

The spices should be cleaned properly to the desired levels prescribed in the national and international standards.

3. Protection from Contamination by Wastes

Raw spices should be protected from contamination by human, animal, domestic, industrial and agricultural wastes which may be present at levels likely to be a hazard to health. Adequate precautions should be taken to ensure that these wastes are not used and are not disposed of in a manner which may constitute a hazard to health through the food. Arrangements for the disposal of domestic and industrial wastes in areas from which raw materials are derived should be acceptable to the official agency having jurisdiction.

4. Irrigation Control; Spices should not be grown or produced in areas where the water used for irrigation might constitute a hazard to health to the consumer through the spices.

5. Pest and Disease Control

Control measures involving treatment with chemical, physical or biological agents should only be undertaken under direct supervision of personnel who have a thorough knowledge of the potential hazards to health. Such measures should only be carried out in accordance with the recommendations of the Codex Alimentarius Commission or, where these do not exist, by the official agency having jurisdiction.

6. Drying (Curing)

Plants or parts of plants used for the preparation of spices may be dried naturally or artificially, provided adequate measures are taken to prevent contamination or alteration of the raw material during the process. To prevent the growth of microorganisms, especially mycotoxin producing mould, a safe moisture level should be achieved. Suitable precautions should be taken to protect the spices from contamination by domestic animals, rodents, birds,

mites and other arthropods or other objectionable substances during drying, handling and storage.

7. Packaging

Packaging should protect the clean, dried spices from contamination and the entry of water or excessmoisture. In particular, the re-absorption of ambient moisture in humid tropical climates should be prevented. Contamination from mineral oils used for processing natural fiber bags should be prevented by the use of liners where appropriate. Reusable containers should be properly cleaned and disinfested before reuse.

SUGGESTED READINGS:

- APARNATHI, K.D. and BORKHATRIYA, V.N. 1999. Improved extraction and stabilization of natural food colourants. *Indian Fd. Ind.* 18(3): 164–168.
- DOWNHAM, A. and COLLINS, P. 2000. Colouring our foods in the last and next millennium. *Int. J. Fd. Sci. Technol.* 35(1): 5–22.
- HENRY, B. 1998. Use of capsicum and turmeric as natural colours in the food industry. *Indian Spices* 35(3): 9–11.
- SHARMA, A., KOHLI, A.K., SHARMA, G. and RAMAMOORTHY, N. 2003. Radiation hygienization of spices and dry vegetable seasonings. *Spice India* 1(1): 26–29.
- SPICES BOARD OF INDIA. 2001. Guidelines for production of organic spice in India. Spice Board, Kochi, Kerala, India.