



RQF LEVEL 4



FOPPS403

FOOD PROCESSING

Powder Spices Production

TRAINER'S MANUAL

October, 2024



POWDER SPICES PRODUCTION



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ACRONYMS

%: Percentage

°C: Degree Celsius

AGR: Agriculture

CA: Controlled atmosphere

CCP: Critical Control Point

CIP: Cleaning in Place

CO₂: Carbon dioxide

COP: Cleaning Out of Place

FAO: Food and agriculture organization

FIFO: First in first out

FOP: Food Processing

H₂O: Water

Hcl: Hydrochloric acid

IC: Indicative content

Kg: Kilogram

pH: Potential of hydrogen

PPE: Personal Protective Equipment

PRPs: Pre-requisite programs

QAC: Quaternary ammonium compound

RFDA: Rwanda food and drug authority

RH: Relative humidity

RQF: Rwanda Qualification Framework

RTB: Rwanda TVET Board

SOP: Standard Operating Procedure

SSOPs: Sanitation standard operating procedures

TQUM Project: TVET Quality Management Project

TVET: Technical and Vocational Education and Training

UV: ultra-violet

INTRODUCTION

This trainer's manual includes all the methodologies required to effectively deliver the module titled **“Powder Spice Production.”** Trainees enrolled in this module will engage in practical activities designed to develop and enhance their competencies.

The development of this training manual followed the Competency-Based Training and Assessment (CBT/A) approach, offering ample practical opportunities that mirror real-life situations.

The trainer's manual is organized into Learning Outcomes, which is broken down into indicative content that includes both theoretical and practical activities. It provides detailed information on the key competencies required for each learning outcome, along with the objectives to be achieved.

As a trainer, you will begin by asking questions related to the activities to encourage critical thinking and guide trainees toward real-world applications in the labor market. The manual also outlines essential information such as learning hours, didactic materials, and suggested methodologies.

This manual outlines the procedures and methodologies for guiding trainees through various activities as detailed in their respective trainee manuals. The activities included in this training manual are designed to offer students opportunities for both individual and group work. Upon completing all activities, you will assist trainees in conducting a formative assessment known as the end learning outcome assessment. Ensure that students review the key reading and the points to remember section.

MODULE CODE AND TITLE: FOPPS403 POWDER SPICES PRODUCTION

Learning Outcome 1: Prepare the workplace and ingredients

Learning Outcome 2: Make powder spices

Learning Outcome 3: Store the powder spices

Learning Outcome 1: Prepare workplace and ingredients



Indicative contents

1.1 Selection of tools and equipment used in powder spices production

1.2 Selection of materials used in production of powder spices

1.3 Arrangement of workplace in powder spices production

1.4 Preparation of ingredients

Key Competencies for Learning Outcome 1: Prepare workplace and ingredients

Knowledge	Skills	Attitudes
• Description of tools and equipment used in production of powder spices • Description of Cleaning agents • Description of ingredient used in powder spices • Description of packaging material • Description process of Cleaning of workplace	• Selecting tools, materials and equipment • Preparation of cleaning products • Cleaning tools, equipment and workplace • Selecting ingredients for powder spices • Preparing ingredients • Checking cleanliness of workplace	• Having a critical thinking • Being result oriented • Respecting safety principles • Being cleanliness while preparing ingredient • Being careful while selecting tools and equipment • Being careful while adjusting tools and equipment • Being accurate while measuring ingredient



Duration: 10hrs

Learning outcome 1 objectives:



By the end of the learning outcome, the trainees will be able to:

1. Describe correctly tools and equipment used in powder spice production
2. Select properly the tools and equipment used in powder spices production
3. Describe correctly ingredient used in powder spices
4. Select correctly materials used in production of powder spices
5. Arrange properly the workplace for powder spices production
6. Prepare correctly the ingredients for powder spices production morphology
7. Checking correctly cleanliness of workplace



Resources

Equipment	Tools	Materials
• Water tank • Conveyor belt • Sun dryer • Dehydrator • Tray grinder • Oven drier • PPE • Air dryer • Slicer	• Stainless steel dishes • Stainless steel buckets • Mops • Thermometers • Hygrometer • Moisture meter • Towel • Swabbing tool	• Salts • Sugar • Preservatives • Garlic • Onions • Ginger • Chilli • Rosemary • Lemongrass • African basil • Pepper • Celery • Water • Sanitizers • Detergents • Tins • Bottles • Laminated peppers • Labelling peppers



Advance Preparation:

Before delivering this learning outcome, you are recommended to:

- ❖ For theoretical activity
 - Have didactic materials such as pictures, images
 - Prepare the tasks sheets for trainees
 - Session plan according to the selected methodology
- ❖ For practical activities
 - Have a workshop with tools and equipment
 - Have different cleaning products
 - Having different types of ingredients
 - Having different types of fresh spices



Indicative content 1.1: Selection of Tools and Equipment Used in Powder Spices Production



Duration: 2hrs



Theoretical Activity 1.1.1: Description of tools and equipment used in spices powder production



Notes to the trainer:

- Trainer may engage trainees in individual and group activities that ensuring trainees to understand the list, functionality and safety precaution of tools and equipment used in powder spices production



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and request trainees to answer the following questions:

- i. What are the tools and equipment used in spice powder production?
- ii. State the use of each tool and equipment mentioned above.
- iii. What are the safety precautions to be applied when using tools and equipment?

Step 2: Ask trainees to write their answers of flipcharts, papers or blackboard

Step 3: Asks trainees to present their answers

Step 4: Provide the expert view to the class.

Step 5: Address any questions or concern

Step 6: Ask trainees to read Key reading 1.1.1.



Points to Remember

- List of tools and equipment used spices powder production Use of tools and equipment used spices powder production
- Safety precautions while using tools and equipment used spices powder production



Practical Activity 1.1.2: Selection of tools and equipment used in powder spice production



Notes to the trainer

- The trainer should have tools and equipment for powder spices production in workshop



Key steps:

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and asks trainees to go in food processing workshop and select all tools and equipment required to produce powder spices
- Step 2:** Demonstrate how to select tools and equipment used in production of powder spices
- Step 3:** Asks trainees to select tools and equipment used to make powder spices
- Step 4:** Asks trainees to present their works
- Step 5:** Verify the work done and Provide clarification if any
- Step 6:** Ask trainees to read the key reading 1.1.1 for more clarification
- Step 7:** Asks trainees to perform application of learning 1.1



Points to Remember

- **Tools and equipment selection criteria**

The criteria for selecting tools and equipment used in spices production are including Material **Compatibility**, **Hygiene** and **Sanitation**, **Efficiency** and **Productivity**, Durability and Longevity, Safety, Cost-effectiveness and Size and Space Requirements.

- When selecting tools and equipment for powder spice production, prioritize those made from stainless steel or other non-corrosive materials to ensure durability and hygiene.
- Additionally, ensure that all equipment is easy to clean and maintain to prevent contamination and preserve the quality of the spices.
- Lastly, consider the production scale and choose equipment that can efficiently handle the volume without compromising on quality or safety standards



Application of learning 1.1.

Asks trainees to go in workshop and select tools equipment required to produce a ginger powder and garlic powder.

Time allocation is 2hours.

Checklist

Criteria	Indicator	Yes	No
1. Tools and Equipment are well selected according to their use	1.1 Weighing Tools are selected		
	1.2 Washing equipment are selected		
	1.3 Grinding Tools and equipment are selected		
	1.4 Tools and equipment for packaging are selected		
2. Hygiene and sanitation are well respected	2.1 Hygiene and sanitation are respected		



Indicative content 1.2: Selection of materials used in powder spices production



Duration: 3hrs



Theoretical Activity 1.2.1: Description of cleaning agents



Notes to the trainer:

- Trainer may use small groups to describe cleaning agents
- The use pictures or videos as didactic materials is required



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions

- i. What is cleaning and why is it important in powder spices production?
- ii. What are the types of soil are mostly present in powder spices production?
- iii. What cleaning agents used to remove these soils powder spices?
- iv. What is their role in cleaning process?
- v. What are the criteria to consider when selecting cleaning products?

Step 2: Ask trainees to write their answers of flipcharts, papers or blackboard

Step 3: Ask trainees to present their answers

Step 4: Provide the expert view to the class and clarify the ideas

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 1.2.1 in trainee manual



Points to Remember

- Remember that they are different types of cleaning products including water, detergents, sanitizers, disinfectants, alkaline cleaners and acidic cleaners.
- When describing cleaning agents used in powder spice production, it is essential to emphasize the importance of using non-toxic and non-reactive cleaning agents to prevent contamination of spices.

- Use disinfectants and sanitizers that are specifically designed for food processing environments, and always follow manufacturer guidelines for dilution and application.
- Regularly monitor and document the effectiveness of cleaning practices to maintain a high standard of hygiene.



Theoretical Activity 1.2.2: List of ingredients used in powder spices



Notes to the trainer:

- Trainer may use small groups to describe ingredients used in powder spices
- Avail some ingredients used in production of powder spices



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- List and give the use of ingredients used to production spices?

Step 2: Ask trainees to write their answers on flipcharts, papers or blackboard

Step 3: Facilitate the trainees to present their answers

Step 4: Provide the expert view

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 1.2.3 in trainee manual



Points to Remember

- Keep in mind that there are two categories of powder spices (food spices, beverage spices) all categorized according to their role (functions).
- Proper storage and mindful usage of these spices will ensure that their flavors remain vibrant, enriching your culinary and beverage creations.



Practical Activity 1.2.3: Selecting ingredient of powder spices



Notes to the trainer

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and asks trainees to go in food processing workshop and select ingredients required to produce powder spices
- Step 2:** Demonstrate how to select ingredients used in production of powder spices
- Step 3:** Asks trainees to select ingredients used for make powder spices
- Step 4:** Asks trainees to present their works
- Step 5:** Verify the work done and Provide clarification if any
- Step 6:** Ask trainees to read the key reading 1.2.2



Theoretical Activity 1.2.4: Description of packaging materials



Notes to the trainer:

- Avail sample of packaging materials
- Trainer may engage trainees in individual and group activities



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity by asking trainees the following questions:

- i. What is the role of packaging materials in powder spices production
- ii. What are the types of packaging materials used in powder spices
- iii. What are the properties of a suitable packaging material for powder spices

- iv. What are the advantages and disadvantages of using plastic pouches, plastic tins, glass jars, metal tins and laminated bags of packaging materials

Step 2: Ask trainees to write their answers of flipcharts, papers or blackboard

Step 3: Facilitate trainees to present their answers

Step 4: Provide the expert view to the class and clarify the ideas by using examples and didactic materials

Step 5: Address any questions or concern

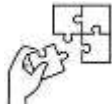
Step 6: Ask trainees to read the Key reading 1.2.3

Step 7: Ask trainees to perform application of learning 1.2



Points to Remember

- Note that there are different types of packaging materials used in powder spices (plastic pouches, glass jars, metal tins and laminated bags)
- Function of each type of packaging material (advantages and disadvantages of each type of packaging materials).
- Material for packaging powder spices should be made in high-barrier material to protect against moisture, light, and oxygen, which can degrade the quality and flavor of the spices.
- Consider the following criteria when selecting packaging materials for powder spices moisture barrier, oxygen barrier, aroma barrier, strength, flexibility, sealability, non-reactive, no migration, aesthetics, convenience and cost-effectiveness



Application of learning 1.2.

Ask trainees to go in school workshop and select the best onions and ginger, along with essential ingredients and packaging materials for producing onion- ginger blended powder. To perform this activity ensure the consideration of types of soil (dirty) for selection of cleaning product, quality of onion and ginger for powder spices, ingredients and packaging materials for each type of powder spices.

Allocated time is 2 hours

Checklist

Criteria	Indicator	Yes	No
1. Cleaning agents are well selected	1.1 Detergents are selected		
	1.2 Sanitizers are selected		
	1.3 Alkaline cleaners are selected		
	1.4 Type of soil is considered		
	1.5 Type of surface is considered		
	1.6 Acidic cleaners are selected		
2. Ingredients are well selected	2.1 Ingredients for ginger powder are selected		
	2.2 Ingredients for ginger powder are selected		
3. Raw spices are well selected	3.1 Quality ginger are selected		
	3.2 Quality onions are selected		
4. Packaging materials are well-selected	4.1 Packaging materials for ginger powder are selected		
	4.2 Packaging materials for onion powder are selected		



Indicative content 1.3: Arrangement of workplace in powder spices production



Duration: .3hrs



Theoretical Activity 1.3.1: Description of the process of cleaning workplace



Notes to the trainer:

- Trainer may prepare all didactic materials required to deliver this course.
- Trainer may use small groups to describe ingredients used in powder spices
- Avail video which show how to clean workplace



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the questions bellow

- What is the purpose of cleaning in powder spices production?
- What are the methods of cleaning used in powder spices production?
- What are the factors that affect cleaning effectiveness?

Step 2: Ask trainees to write their answers of flipcharts, papers or blackboard

Step 3: Facilitate trainees to present their answers

Step 4: Provide the expert view

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 1.3.1



Points to Remember

- Note that regular and thorough cleaning is essential in powder spice production to prevent contamination, maintain hygiene, reduce spoilage, and comply with regulations. Factors affecting cleaning effectiveness include cleaning agents, frequency, techniques, personal hygiene, and equipment maintenance. Wet cleaning,

using water-based solutions, is suitable for most surfaces and involves scrubbing, wiping, and rinsing. Dry cleaning, using solvents, is primarily used for delicate fabrics but can also be applied to certain equipment. By following appropriate cleaning techniques and prioritizing workplace cleanliness, you can ensure the safety, quality, and compliance of your powder spice production.



Practical Activity 1.3.2: Arrangement of tools and equipment used in powder spices production



Notes to the trainer

- The trainer should demonstrate how to arrange tools and equipment
- Trainer may assign individual or group activities during practice



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce activity and Ask trainees to do to powder spice to arrange tools and equipment in the workplace

Step 2: Demonstrate how to sanitize workplace how to arrange tools and equipment used in powder spice production according to SOP and product flow chart

Step 3: Ask trainees to arrange the tools and equipment

Step 4: Asks trainees to present arranged tools and equipment in the workplace

Step 5: Ask asks to read the Key reading 1.3.1 for more clarification



Points to Remember

- Remember that when arranging the workplace for powder spices, standard operation procedures and flow chart of powder spice production should be considered.



Practical Activity 1.3.3: Checking cleanliness of workplace



Notes to the trainer

- The trainer may have all materials and tools required to monitor cleaning effectiveness in the workplace
- The trainer should demonstrate how to Check cleanliness of workplace
- Avail necessary tools and equipment for cleaning workplace



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Avail the workplace to be cleaned with cleaning materials , tools and equipment and cleaning effectiveness monitoring materials and tools

Step 2: Ask trainees to perform visual inspection of cleanliness

Step 3: Ask trainees to perform phenolphthalein test

Step 4: Ask trainees to perform pH test

Step 5: Help trainees to demonstrate their work to the whole class

Step 6: Provide feedback on learner's activities

Step 7: Ask trainees to read the Key reading 1.3.3 for more clarification



Points to Remember

- Monitor cleaning effectiveness by using the method of visual observation phenolphthalein and pH



Theoretical Activity 1.3.4: Description of methods of preparing ingredients for powder spices



Notes to the trainer:

- Trainer may prepare all didactic materials required to deliver this course.
- Trainers may have a process flow chart for producing powder spices



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

Define the following terms used in powder spices production:

- a. Sorting
- b. Grading
- c. Weighing
- d. Washing
- e. Peeling

Step 2: Ask trainees to write their answers on flipcharts, papers or blackboard

Step 3: Facilitate trainees to present their answers

Step 4: Provide the expert view

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 1.3.4



Points to Remember

- To make a quality product, the following are essential activities done to prepare ingredients sorting, grading, weighing, washing, peeling and size reduction. These methods also help to make the production easier.



Practical Activity 1.3.5: Preparing ingredients for powder spices



Notes to the trainer

- Step 1:** Introduce the activity by asking learners to go to workshop to prepare ingredient by sorting, grading, weighing, washing, peeling, and size reduction for powder spices
- Step 2:** Demonstrate the procedures for sorting, grading, weighing, washing, peeling and size reduction of raw spices
- Step 3:** Ask learners to prepare spices by sorting, grading, weighing, washing, peeling and size reduction of raw spices
- Step 4:** Ask learners to present their work and provide clarifications
- Step 5:** Provide feedback on learner's activities
- Step 6:** Ask trainees to read the Key reading 1.3.4 for more clarification
- Step 7:** Ask trainees to perform application of learning 1.3.



Points to Remember

- To make a quality product, the following are essential activities done to prepare ingredients sorting, grading, weighing, washing, peeling and size reduction. These methods also help to make the production easier.



Application of learning 1.3.

You are asked to ensure that the workshop is maintained in a clean and organized manner to prevent contamination and maintain product quality. Make a good arrangement and cleaning of the workplace in your powder spice production facility. Prepare garlic for being processed into powder spice by sorting, grading, weighing, washing, peeling, and make them into crushed pieces to be dried.

Allocated hours is 3 hours.

Checklist:

Criteria	Indicator	Yes	No
1. Tools and equipment are well cleaned	1.1 Cleaning products are properly selected		
	1.2 Cleaning procedures are followed		
	1.3 Appropriate cleaning technique is used		
2. Work area is well cleaned	2.1 Cleaning products are properly selected		
	2.2 Cleaning procedures are followed		
	2.3 Appropriate cleaning technique is selected		
	2.4 Cleaning effectiveness is monitored		
3. Cleanliness is monitored	3.1 Visual inspection is conducted		
	3.2 A phenolphthalein test is conducted		
	3.3 pH test is conducted		
4. Workplace is arranged	4.1 Flow chart is considered		
	4.2 Standard operating procedures are considered		
5. Raw spices are prepared	5.1 Raw spices are appropriately sorted		
	5.2 Raw spices are correctly graded		
	5.3 Raw spices are properly weighed		
	5.4 Raw spices are appropriately washed		
	5.5 Raw spices are properly peeled		
	5.6 Raw spices are appropriately cut		



Learning outcome 1 end assessment

Written assessment

A. Multiple Choice Questions

1. Which of the following is NOT a common tool used in powder spice production?

- a. Mortar and pestle
- b. Blender
- c. Oven
- d. Sieve

Answer: Blender

2. What is the primary purpose of cleaning the workplace in a powder spice production facility?

- i. To prevent contamination
- ii. To improve efficiency
- iii. To enhance product quality
- iv. All of the above

Answer: To prevent contamination

3. Which of the following is NOT a type of cleaning agent commonly used in powder spice production?

- I. Detergent
- II. Sanitizer
- III. Disinfectant
- IV. Lubricant

Answer: Lubricant

4. What is the primary purpose of sorting and grading ingredients in powder spice production?

- A. To ensure consistency
- B. To improve flavor
- C. To increase shelf life

D.To reduce waste

Answer: To ensure consistency

5. Which of the following is NOT a common packaging material for powder spices?
- a) Glass jars
 - b) Plastic pouches
 - c) Metal cans
 - d) Cardboard boxes

Answer: Plastic pouches

B. Read the statement below and Answer with True if it is correct or False if it is wrong.

- 1. The selection criteria for tools and equipment depend on the specific needs of the production process. **True**
- 2. The primary function of tools and equipment in powder spice production is to enhance the flavour of the spices. **False**
- 3. Safety precautions must always be followed when adjusting tools and equipment used in powder spice production. **True**
- 4. Selection of tools and equipment for powder spice production should be based solely on their cost. **False**
- 5. Cleaning agents used in powder spice production should be chosen based on their effectiveness and safety. **True**
- 6. Sugar is commonly used as a cleaning agent in the production of powder spices. **False**
- 7. Wet cleaning methods are more effective than dry cleaning methods in every situation. **False**
- 8. Standards Operating Procedures (SOPs) provide guidelines for the arrangement and operation of the workplace. **True**

Practical assessment

As a level 4 food-processing student, you are asked to setting up a small-scale powder spice production workshop. You will need to select a suitable workspace, arrange equipment, and prepare raw the ingredients.

Criteria	Indicator	Yes	No
1. Materials, Tools and selected according to the requirements	1.1 Tools and equipment are selected		
	1.2 Materials are selected		
	1.3 Cleaning agents are selected		
	1.4 Ingredients are selected		
	1.5 Raw spices are selected		
	1.6 Packaging material are selected		
2. Workplace is well arranged according to Production line	2.1 Tools and equipment are cleaned		
	2.2 Work area is cleaned		
	2.3 Workplace is arranged		
3. Fresh ingredients are accurately prepared based on product specification	3.1 Sorting is done		
	3.2 Grading done		
	3.3 Weighing is done		
	3.4 Washing is done		
	3.5 Peeling is done		
	3.6 Chopping is performed done		



Further information to the trainer

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Learning Outcome 2: Make powder spices



Indicative contents

2.1 Drying raw spices

2.2 Grinding dried spices

2.3 Restoration of organoleptic characteristics of ground spices

Key Competencies for Learning Outcome 2: Make powder spices

Knowledge	Skills	Attitudes
• Description methods of drying spices • Description of properties of organoleptic powder spices	• Applying Pre-treatment on raw spices • Drying raw spices • Checking the dryness raw spices • Grinding dried spices • Sieving ground spices • Testing powder spices using organoleptic test. • Colouring powder spices • Flavouring powder spices	• Being punctual while drying raw spices • Using accurate settings • Critical thinking • Quick reflection



Duration: 30hrs

Learning outcome 2 objectives:



By the end of the learning outcome, the trainees will be able to:

1. Describe correctly methods of pre-treatment on raw spices
2. Apply properly pre-treatment on raw spices used in powder spices production
3. Dry properly raw spices used in powder spices production
4. Grind properly dried spices for powder spices production spices
5. Sieve correctly grinded spices into the sieve of different size
6. Test correctly quality of ground powder spices
7. Apply properly Colouring of powder spices
8. Add correctly flavors in powder spices



Resources

Equipment	Tools	Materials
• Elevator, • Belt Conveyor • Air-Dryer Machine • Slicer Machine • Sun Dryer • Solar Dryer • Desiccator • Dehydrator • Trays • Grinder • Oven Dryer • Mixer • Food Chopper • Mortar • Pestle • PPE • Sieving Machine	• Thermometer • Hygrometer • Moisture Meter • Dustbins • Knives • Cutting Board • Sieves • Towels	• Table salts • Sugar • Preservatives • Garlic • Onions • Ginger • Chili • Rosemary • Lemongrass • African Basil • Pepper • Celery • Food Additives

• Working Table		
 Advance Preparation: Before delivering this learning outcome, you are recommended to: ❖ For theoretical activities • Have didactic materials such as pictures, images • Prepare the tasks sheets for trainees • Session plan according to the selected methodology ❖ For practical activities • Avail the workshop • Avail tools and equipment in the workshop • Avail all spices and ingredients		



Indicative content 2.1: Drying raw spices



Duration: 5hrs.



Theoretical Activity 2.1.1: Description of pre-treatment methods on raw spices



Notes to the trainer:

Trainer may prepare didactic materials including images, pictures and dried spices to ensure the smooth delivery of the activity



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- i. How to maintain the properties of raw spices during drying?
- ii. State and Explain the methods of pretreatment of raw spices

Step 2: Ask trainees to write their answers of flipcharts, papers or blackboard

Step 3: Facilitate trainees to present their answers

Step 4: Provide the expert view to the class and clarify the ideas by using examples and didactic materials

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 2.1.1



Points to Remember

- Note that to ensure the preservation of organoleptic properties of spices during drying, pretreatment methods should be performed. Among these pretreatment methods, there are blanching that Blanching is a cooking technique that involves briefly immersing food, usually vegetables or fruits, in boiling water, then immediately plunging it into ice water to stop the cooking process and soaking spices in chemicals.



Practical Activity 2.1.2: Applying pre-treatment on raw spices



Notes to the trainer

- The trainer should ensure all tools and equipment for pretreatment of raw spices available in workshop
- Should demonstrate how to apply pretreatment on raw spices



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to refer to the Key reading 2.1.1 to perform the activities

Step 2: Demonstrate to trainees how to apply pretreatment (blanching with hot water and soaking in chemicals) of raw spices

Step 3: Ask trainees to apply pretreatment of raw spices with blanching and soaking in water.

Step 4: Ask trainees to present the output of their activity, working parameters of and procedures used to the class.

Step 5: Provide the expert view and collection of some made errors

Step 6: Ask students to read Key reading 2.1.2 for more clarifications



Points to Remember

- Respect the temperature and time when carrying out spices pretreatment with blanching
- Choose the appropriate type of chemical and ensure the right concentration and exposure time when applying soaking with chemicals.



Theoretical Activity 2.1.3: Description of the methods of drying raw spices



Notes to the trainer:

- Trainer may prepare didactic materials including images, pictures and dried spices to ensure the smooth delivery of the activity



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- What is drying and its importance in powder spices production
- Give different methods of drying raw spices

Step 2: Ask trainees to write their answers on flipcharts, papers or blackboard

Step 3: Facilitate trainees to present their answers

Step 4: Provide the expert view to the class and clarify the ideas by using examples and didactic materials

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 2.1.3



Points to Remember

- Note that there are different methods used of drying spices for powder spices production including sun drying, solar drying, oven drying, dehydrator drying



Practical Activity 2.1.4: Drying raw spices



Notes to the trainer

- The trainer may ensure all tools and equipment for drying of raw spices available in workshop
- Should demonstrate how to dry raw spices



Key steps:

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and ask trainees to go in food processing workshop to perform drying of raw spices
- Step 2:** Explain the task and provide clear work instruction (Task, PPE, Time allocated)
- Step 3:** Demonstrate how to dry raw spices. While demonstrating, explain the procedure for drying spices.
- Step 4:** Ask trainees to dry raw spices.
- Step 5:** Verify whether drying is well performed and provide feedback where necessary.
- Step 6:** Ask trainees to read key reading 2.1.4 in trainee manual



Points to Remember

- Respect the temperature and time when carrying out spices pretreatment with blanching
- Choose the appropriate type of chemical and ensure the right concentration and exposure time when applying soaking with chemicals.



Practical Activity 2.1.5: Checking of dryness of dried spices



Notes to the trainer

- Trainer may ensure the availability of drying process monitoring tools
- Trainer may assign individual or group activities during practice
- Trainer may ask trainees to measure the dryness parameters
- Trainer may allocate properly the time corresponding to the activity



Key steps:

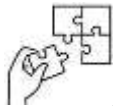
While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and ask trainees to go to food processing workshop to perform checking of dryness of dried spices
- Step 2:** Demonstrate to trainees how to check dryness of dried spices by analysis of brittleness and moisture content
- Step 3:** Ask trainees to analyze the Hardness and brittleness and measure Moisture content of a dried spice
- Step 4:** Ask trainees to present the result to the class.
- Step 5:** Provide the expert view and collection of some made errors
- Step 6:** Ask students to read Key reading 2.1.5 for more clarifications



Points to Remember

- Note that to dry raw spices reduce raw spices different methods are sun drying, solar drying, oven drying and dehydrator drying. To ensure the effectiveness of drying process the moisture content, Hardness and brittleness should be monitored.



Application of learning 2.1.

For preparing, the celebration of parent's day there is a need of preparation of good food that requires having much spices and the school has bought different types of raw spices. As a student of level 4 food processing, you are tasked to go in your workshop dry green paper and onions that will be used to make powder spices. The activity should be done in 5 hours and the desired moisture content is 14%-16%.

Solution:

Criteria	Indicator	Yes	No
1. Raw ingredients are properly pretreated	1.1 Pretreatment method is selected		
	1.2 Materials for pretreatment are selected		
	1.3 Working parameters are applied		
	1.4 Time is respected		
2. drying method are properly applied	2.1 Drying method is selected		
	2.2 Drying temperature is applied		
	2.3 Drying time is respected		
3. dryness parameters for raw spices are checked	3.1 Moisture content is achieved		
	3.2 Hardness and brittleness are checked		



Indicative content 2.2: Grinding of dried spices



Duration: 10 hrs.



Theoretical Activity 2.2.1: Description of process of grinding dried spices



Notes to the trainer:

- Trainer may prepare didactic materials to ensure the smooth delivery of the activity
- Trainer may engage trainees in individual or group activities
- Trainers may link this activity with preparation of spices



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- what is grinding in production of powder spices
- Give the importance of grinding in powder spices production

Step 2: Ask trainees to write their answers on flipcharts, papers or blackboard

Step 3: Facilitate trainees to present their answers

Step 4: Provide the expert view to the class and clarify the ideas by using examples and didactic materials

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 2.2.1



Points to Remember

- Note that Grinding is a crucial step in powder spice processing. It reduces the size of the spice particles, making them more accessible, improves its solubility, allowing it to blend more easily with other ingredients in recipes and help to release essential oils and other compounds that contribute to the unique flavor profile of a spice.



Practical Activity 2.2.2: Grinding of dried spices



Notes to the trainer

- Trainer should ensure the availability of tools and equipment for grinding spices
- Trainer may assign individual or group activities during practice
- Should demonstrate how to grind spices into powder spices



Key steps:

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and ask trainees to go to food processing to perform grinding of dried spices
- Step 2:** Demonstrate to trainees how to grind dried spices
- Step 3:** Ask trainees to grind spices into fine powders
- Step 4:** Ask trainees to present the result to the class.
- Step 5:** Provide the expert view and collection of some made errors
- Step 6:** Ask students to read Key reading 2.2.2 for more clarifications



Points to Remember

- Note that grinding of dried spices is an essential step used to reduce particle size, enhance flavor extraction, improve solubility and increase convenience. To perform it the method of mortar and pestle, spice grinder and grinder mill are used



Practical Activity 2.2.3: Sieving ground spices



Notes to the trainer

- Trainer may ensure the availability of different size of sieves
- Trainer may assign individual or group activities during practice
- Trainer may ask trainees to sieve ground spices
- Trainer may allocate properly the time corresponding to the activity



Key steps:

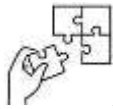
While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and ask trainees to go to workshop to sieve ground spices
- Step 2:** Demonstrate trainees the procedures of sieving of ground spices
- Step 3:** Ask trainees to sieve ground spices into different particle sizes (fine, medium and course)
- Step 4:** Ask trainees to present the products result to the class.
- Step 5:** Provide the expert view and collection of some made errors
- Step 6:** Ask students to read Key reading 2.2.3 for more clarifications



Points to Remember

- Note that sieving of ground powder determines the texture and solubility of powder spices. It starts with selection of sieves with appropriate mesh, pass ground spices through sieves and collect sieved fractions.



Application of learning 2.2.

Go in your workshop and take 3kg of previously dried green pepper and make it into 500gr of fine powder, 1kg of medium and 1kg of course textured powder.

Time allocated is 2hours

Solution:

Criteria	Indicator	Yes	No
1. Spices grinding procedures are correctly applied	1.1 Appropriate grinding equipment is selected		
	1.2 Grinding steps are followed		
	1.3 Desired texture is achieved		
	1.4 Time is respected		
2. Ground spices are properly sieved	2.1 Appropriate sieves are selected		
	2.2 Sieving procedures are followed		
	2.3 Course texture is achieved		
	2.4 Medium texture is achieved		
	2.5 Fine texture is achieved		



Indicative content 2.3: Restoration of organoleptic characteristics of ground spices



Duration: 5hrs.



Theoretical Activity 2.3.1: Description of Organoleptic properties of powder spices



Notes to the trainer:

- Trainer may prepare didactic materials to ensure the smooth delivery of the activity
- Trainer may engage trainees in individual or group activities



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- i. What is the importance of spices in food?
- ii. Give the quality of powder spices that make them useful in food.
- iii. Distinguish organoleptic properties of powder spices
- iv. Explain the importance of grinding in powder spices production

Step 2: Ask trainees to write their answers of flipcharts, papers or blackboard

Step 3: Facilitate trainees to present their answers

Step 4: Provide the expert view to the class and clarify the ideas by using examples and didactic materials

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 2.3.1



Points to Remember

Remember powder spices are used to enhance the organoleptic properties of food, which are taste, sight, smell, touch, and sometimes sound. To enhance these properties there should be fully equipped with them.



Practical Activity 2.3.2: Testing powder spices with organoleptic tests



Notes to the trainer

- Trainer may ensure the availability of tools and equipment for testing organoleptic properties of food spices
- Trainer may assign individual or group activities during practice
- Trainer may avail different types of powder spices and the food to be used in organoleptic properties
- Trainer may ask trainees to prepare organoleptic evaluation form
- Trainer may ask trainees to use a panel of 13 people to test food
- Trainer may allocate properly the time corresponding to the activity



Key steps:

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activities by asking trainees to go to food processing workshop to perform organoleptic test of powder spices.
- Step 2:** Demonstrate to trainees how to test food with organoleptic tests by showing how to prepare sample, prepare organoleptic evaluation form, selection of panelists and lead organoleptic test
- Step 3:** Ask trainees to identify the properties to be analyzed and prepare a organoleptic test form
- Step 4:** Ask trainees to select panel of 13 people to test the food
- Step 5:** Ask trainees to conduct organoleptic test
- Step 6:** Ask trainees to record the results and analyze the results
- Step 7:** Ask trainees to present results
- Step 8:** Provide the expert view and collection of some made errors
- Step 9:** Ask students to read Key reading 2.3.2 for more clarifications



Points to Remember

- Note that organoleptic properties of food are taste, sight, smell, touch, and sometimes sound
- To test organoleptic properties of spices needs a panel of testers and a prepares form to collect the perspective of panelists toward the powder spice



Practical Activity 2.3.3: Coloring powder spices



Notes to the trainer

- Trainer may ensure the availability of coloring agents
- Trainer may assign individual or group activities during practice



Key steps:

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity by asking trainees to perform coloring of powder spices
- Step 2:** Demonstrate to trainees how to perform coloring powder spices from selection appropriate coloring, measuring the required quantity and apply colorings
- Step 3:** Ask trainees to calculate the required quantity of coloring to be used
- Step 4:** Ask trainees to apply coloring of powder spices
- Step 5:** Provide the expert view and clarifications where needed
- Step 6:** Ask trainees to read Key reading 2.3.3 for more clarifications



Points to Remember

- Coloring of spices is done according to the intended use of spice.
- There are natural coloring agents made from organic plants and synthetic coloring
- Always make sure to use appropriate dose of coloring especially when synthetic coloring agents are used



Practical Activity 2.3.4: Flavoring powder spices



Notes to the trainer

- Trainer may ensure the availability of flavoring agents
- Trainer may assign individual or group activities during practice



Key steps:

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and ask trainees to go to workshop to conduct flavoring of powder spice
- Step 2:** Demonstrate to trainees how to perform flavoring of powder spices by selecting appropriate flavoring agent, calculating the required quantity and apply flavors.
- Step 3:** Ask trainees to perform flavors of powder spices
- Step 4:** Ask trainees to present the product to the class.
- Step 5:** Provide the expert view and clarifications where needed
- Step 6:** Ask trainees to read Key reading 2.3.4 for more clarifications
- Step 7:** Ask trainees to perform application of learning 2.3



Application of learning 2.3.

You are tasked with restoring the organoleptic characteristics of a batch of carrot spices that has lost some of its color, flavor, and overall appeal due to prolonged drying.

Checklist

Criteria	Indicator	Yes	No
1. Selection of tools and equipment are properly selected	1.1 Tools for organoleptic are selected		
	1.2 Tools and equipment for coloring spices are selected		
	1.3 Tools and equipment for coloring spices are selected		
2. Organoleptic properties are correctly tested	2.1 An organoleptic test for is prepared		
	2.2 Color is tested		
	2.3 Smell is tested		
	2.4 Taste is tested		
	2.5 Texture is tested		
3. Powder spice are properly colored	3.1 Appropriate permitted food colorants is selected		
	3.2 A correct proportion of colorant is applied		
	3.3 Color post application is reassessed		
4. Powder spice is are properly flavored	4.1 Appropriate permitted flavored is selected		
	4.2 A correct proportion of flavor is applied		
	4.3 Flavor post application is reassessed		



Learning outcome 2 end assessment

Written assessment

A. Choose the Best Answer

1. Which of the following is NOT a pre-treatment method for raw spices before drying?
 - i. Blanching
 - ii. Soaking in chemicals
 - iii. Grinding
 - iv. Washing

Answer: Grinding

2. What is the main purpose of drying raw spices?
 - A. To remove moisture
 - B. To enhance flavor
 - C. To change color
 - D. To increase size

Answer: To remove moisture

3. Which of the following is NOT a common drying method for raw spices?
 - i. Sun drying
 - ii. Solar drying
 - iii. Oven drying
 - iv. Drum dryer

Answer: Drum dryer

4. What are the two main parameters used to check the dryness of raw spices?
 - i. Cleanliness and hygiene
 - ii. Color and aroma
 - iii. Moisture content and brittleness
 - iv. Size and weight

Answer: Moisture content and brittleness

5. Why is grinding dried spices necessary?
- a. To reduce particle size
 - b. To enhance flavor
 - c. To increase moisture content
 - d. To change color

Answer: To reduce particle size

2. Read the following statement and Answer with True if it is correct or False if it is wrong
- i. Blanching is a drying method used in drying raw spices **False**
 - ii. Sun drying is the only method used for drying raw spices. **False**
 - iii. The purpose of drying raw spices is to reduce their moisture content. **True**
 - iv. Moisture content is not a parameter to check when determining the dryness of raw spices. **False**
 - v. Grinding dried spices helps in preserving their flavor for a longer period. **False**
 - vi. Sifting ground spices is part of the grinding procedure. **True**
 - vii. Performing organoleptic tests involves checking the moisture content of ground spices. **False**
 - viii. Flavoring of powder spices is not part of restoring their organoleptic characteristics. **False**
 - ix. Hardness and brittleness are important factors to check when drying raw spices. **True**
 - x. Coloring powder spices is one of the steps in restoring their organoleptic characteristics. **True**
 - xi. Blanching and soaking in chemicals are pre-treatment methods for drying raw spices. **True**
 - xii. The purpose of drying raw spices is to remove moisture and prevent spoilage. **True**
 - xiii. The purpose of grinding dried spices is to reduce particle size and improve flavor extraction. **True**
 - xiv. Coloring powder spices is a common practice to enhance their appearance. **True**
 - xv. Flavoring powder spices is done to improve their taste profile. **True**

Practical assessment

You are a student in a food processing trade, and your school has received a special order of red pepper powder mixed with onion and garlic powders from the nearby Bon-Appetit restaurant for enhancing the flavor of their signature dishes. The restaurant has specified that the spice blend must have a vibrant red color, a balanced and tough flavor profile, with a uniform smooth texture. You are tasked to process 3kg of that spice in 8 hours.

Checklist

Criteria	Indicator	Yes	No
1. Selection of tools and equipment are well done	1.1 Tools for making for blanching are selected		
	1.2 Tools and equipment for drying spices are selected		
	1.3 Tools and equipment for grinding dried spices are selected		
	1.4 Tools and equipment for sieving ground spices are selected		
	1.5 Tools and equipment for coloring spices are selected		
	1.6 Tools and equipment for flavoring spices are selected		
2. Pre-treatment of raw spices is well applied	2.1 Pretreatment method is properly selected		
	2.2 Materials for pretreatment are properly selected		
	2.3 Working parameters are well applied		
	2.4 Time is well respected		
3. Drying of raw spices is well done	3.1 Drying method is properly selected		
	3.2 Drying temperature is well applied		
	3.3 Drying time is well respected		
	3.4 Moisture content is achieved		
	3.5 Hardness and brittleness are achieved		
4. Grinding of powder spices is well done	4.1 Appropriate grinding equipment is properly selected		
	4.2 Grinding steps are followed		
	4.3 Desired texture is achieved		
	4.4 Time is well respected		
	4.5 Appropriate sieves are selected		
	4.6 Sieving procedures are followed		

	4.7 Course texture is achieved		
	4.8 Medium texture is achieved		
	4.9 Fine texture is achieved		
5. Powder spice is well flavored	5.1 Appropriate permitted food colorants is selected		
	5.2 A correct proportion of colorant is properly applied		
	5.3 Color post application is properly reassessed		
	5.4 Appropriate permitted flavored is selected		
	5.5 A correct proportion of flavor is properly applied		
	5.6 Flavor post application is properly reassessed		

END



Further information to the trainer

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Raghavan, S. (2006). *Handbook of spices, seasonings, and flavorings (2nd Ed.)*. CRC Press.

Tainter, D. R., & Grenis, A. T. (2001). *Spices and seasonings: A food technology handbook 2nd Ed.*. Wiley-Blackwell.

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Learning Outcome 3: Store the powder spices



Indicative contents

3.1 Packaging of powder spices

3.2 Labelling of powder spices

3.3 Storage of powder spices

Key Competencies for Learning Outcome 3: Store the powder spices

Knowledge	Skills	Attitudes
• Description of labeling • Description of storage of powder spices	• Preparing packaging materials • Filling of powder spices • Sealing of the package • Labeling of powder spices package • Storing powder spices	• Being punctual • Using accurate settings and measurements • Critical thinking • Quick reflection



Duration: 10hrs

Learning outcome 3 objectives:



By the end of the learning outcome, the trainees will be able to:

1. Prepare correctly packaging materials for powder spices
2. Fill properly powder spices in packaging materials
3. Seal correctly packaging material which contents powder spices
4. Describe correctly labeling in production of powder spices
5. Label clearly of powder spices package
6. Store correctly powder spices in appropriate storage



Resources

Equipment	Tools	Materials
• Filling machine • Sealing Machine • Labelling machine • PPE • Balance	• Spoons • Spatula • Hygrometer	• Labels • Packaging Materials • Powder Spices



Advance Preparation:

Before delivering this learning outcome, you are recommended to:

- ❖ For theoretical activities
 - Have didactic materials such as pictures, images
 - Prepare the tasks sheets for trainees
 - Session plan according to the selected methodology
- ❖ For practical activities
 - Avail the workshop
 - Avail tools and equipment in the workshop
 - Avail all spices and ingredients



Indicative content 3.1: Packaging of Powder spices



Duration: 3hrs.



Practical Activity 3.1.1: Preparation of packaging materials



Notes to the trainer

- The trainer may ensure the availability of different types of packaging materials
- Should demonstrate how to prepare packaging materials



Key steps:

While delivering this activity, pass through the following steps:

- Step 1: Introduce the activity and ask trainees to go to the workshop to prepare packaging materials for powder spices
- Step 2: Demonstrate to trainees how to prepare packaging materials for powder spices by showing them how to wash, sterilize and dry packaging materials
- Step 3: Ask trainees to prepare packaging (wash, sterilize and dry)
- Step 4: Ask trainees to present the result to the class.
- Step 5: Provide the expert view and clarifications where needed
- Step 6: Ask students to read Key reading 3.1.1 for more clarifications



Points to Remember

- Note that preparation packaging materials is intended to use safe materials to avoid contamination of products
- To prepare materials the following procedures should be followed: Washing of packaging materials, Sterilization of packaging materials, Drying of packaging materials



Practical Activity 3.1.2: Filling and sealing of powder spices



Notes to the trainer

- The trainer may ensure the availability of powder spices to be filled
- Trainer may ensure the availability of tools and equipment for preparing filling powder spices
- Trainer may assign individual or group activities during practice



Key steps:

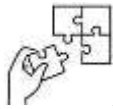
While delivering this activity, pass through the following steps:

- Step 1: Introduce the activity and ask trainees to perform filling and sealing of powder spices
- Step 2: Demonstrate to the trainees how to perform sealing and filling of powder spices
- Step 3: Ask trainees to fill 50 grams of powder spices in prepared packaging materials
- Step 4: Ask trainees to present the result to the class.
- Step 5: Ask trainees to read Key reading 3.1.2 for more clarifications
- Step 6: Ask trainees to perform 3.1



Points to Remember

- Ensure that the packaging materials and filling equipment are clean to avoid contamination.
- Use appropriate filling machines or techniques to ensure consistent and accurate filling.
- Leave a small headspace in the package to allow for expansion during storage and transportation.



Application of learning 3.1.

You are responsible for packaging two popular spice powders: turmeric and garlic. Both spices are known for their strong aromas and flavors. Given the potential for moisture absorption and color degradation, what packaging materials would you select to ensure the quality and freshness of these spices. Prepare packaging materials and fill them in 50gram.

Checklist

S/N	Criteria	Indicator	Yes	No
1	Packaging materials are well Selected	Flavor and aroma barrier is considered		
		Size of packaging material vs quantity of powder is considered		
		Moisture barrier is considered		
2	Packaging materials are well Prepared	Cleaning products are selected		
		Cleaning procedures are applied		
		Sterilization technique is selected		
		Sterilization parameters are applied		
		Sterilized materials are dried		
3	Filling powder spice is well performed	Appropriate quantity is measured		
		Airspace is left		
		Cleanliness is applied		
	Sealing of powder spices	Appropriate seal is selected		
		Sealing is applied		



Indicative content 3.2: Labeling of Powder spices



Duration: 3 hrs.



Theoretical Activity 3.2.1: Description of label for powder spices



Notes to the trainer:

- Trainer may prepare didactic materials to ensure the smooth delivery of the activity
- Trainer may engage trainees in individual or group activities



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- What is labeling?
- Explain the importance of labeling in powder spices production

Step 2: Ask trainees to write their answers of flipcharts, papers or blackboard

Step 3: Facilitate trainees to present their answers

Step 4: Provide the expert view to the class and clarify the ideas by using examples and didactic materials

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 3.2.1



Points to Remember

- Note that labeling play the following roles in powder spices production: Legal Compliance, Consumer Information, Brand Identity, Safety and Warnings, traceability, Marketing, Storage Instructions, nutritional Information and Legal Responsibility.



Theoretical Activity 3.2.2: Description of labelling information



Notes to the trainer:

- Trainer may prepare didactic materials to ensure the smooth delivery of the activity
- Trainer may engage trainees in individual or group activities



Key steps:

While delivering this activity, pass through the following steps:

Step 1: Introduce the activity and ask trainees to answer the following questions:

- i. What is labeling?
- ii. What are the components of a good label for powder spice?
- iii. Explain the importance of each information present on label

Step 2: Ask trainees to write their answers on flipcharts, papers or blackboard

Step 3: Facilitate trainees to present their answers

Step 4: Provide the expert view to the class and clarify the ideas by using examples and didactic materials

Step 5: Address any questions or concern

Step 6: Ask trainees to read the Key reading 3.2.2



Points to Remember

Note that labeling follows the below procedure:

1. Prepare labels
2. Apply labels
3. Verify accuracy



Practical Activity 3.2.3: Perform labelling of powder spices



Notes to the trainer

- The trainer may ensure the availability of materials
- Trainer may ensure the availability of tools and equipment for labeling
- Trainer may assign individual or group activities during practice



Key steps:

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and ask trainees to design and apply label demonstrating the name of product, net weight, ingredients, expiration date, allergens information and other necessary information to packaged powder spice
- Step 2:** Demonstrate to learners how to design and to apply label on packaged powder spices
- Step 3:** Ask trainees to present their labeled spice and explain all information provided on label
- Step 4:** Provide the expert view and clarifications where needed
- Step 5:** Ask trainees to read Key reading 3.2.3 for more clarifications
- Step 6:** Ask trainees Perform application of learning 3.2



Points to Remember

- Apply a label that helps to attract customers
- Remember to provide all information required for labeling of powder spice



Application of learning 3.2.

You are tasked with designing a label for a newly developed African basil powder product. The spice is known for its unique flavor and aroma, and is targeted towards health-conscious consumers

Checklist

Criteria	Indicator	Yes	No
1. Label is well designed	1.1 Product name is mentioned		
	1.2 Ingredients are listed		
	1.3 Net weight indicated		
	1.4 Nutrients are indicated		
	1.5 Product shelf life is indicated		
	1.6 User's instructions are shown		
	1.7 Allergen warnings are shown		
	1.8 Label is prepared		
2. Label is properly applied	2.1 Label is attached		
	2.2 Label is fitting to the packaging material		



Indicative content 3.3: Storage of powder spices



Duration: 3hrs



Theoretical Activity 3.3.1: Description of powder spice storage



Notes to the trainer:

- Trainer may prepare didactic materials to ensure the smooth delivery of the activity
- Trainer may engage trainees in individual or group activities



Key steps:

While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and ask trainees to answer the following questions:
- i. What is the purpose of storage of powder spices?
 - ii. List and explain storage conditions of powder spices
- Step 2:** Ask trainees to write their answers of flipcharts, papers or blackboard
- Step 3:** Facilitate trainees to present their answers
- Step 4:** Provide the expert view to the class and clarify the ideas by using examples and didactic materials
- Step 5:** Address any questions or concern
- Step 6:** Ask trainees to read the Key reading 3.3.1



Points to Remember

- The purpose of storing spices correctly is to preserve their flavor, extend their shelf life, and maintain their nutritional value. Proper storage also helps prevent contamination from moisture and pests, ensuring that the spices remain safe and effective for use.
- Spices should be kept in a cool, dry place, away from direct sunlight, as heat, moisture, and light can degrade their potency. Using airtight containers, helps prevent exposure to air, which can cause oxidation and flavor loss.



Practical Activity 3.3.2: Storing powder spices



Notes to the trainer

- Trainer may ensure the availability of tools and equipment for storage and monitoring of storage conditions
- Should demonstrate how to store powder spices



Key steps:

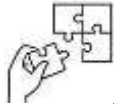
While delivering this activity, pass through the following steps:

- Step 1:** Introduce the activity and ask trainees to store and monitor storage conditions of powder spices
- Step 2:** Demonstrate trainers how to store and monitor storage conditions of powder spices
- Step 3:** Ask trainees to carry out a regular monitoring of storage conditions and record the results
- Step 4:** Ask trainees to present and explain changes in storage conditions and the impact caused by changes
- Step 5:** Provide the expert view and clarifications where needed
- Step 6:** Ask students to read Key reading 3.3.2 for more clarifications
- Step 7:** Ask trainees to perform application of learning 3.3



Points to Remember

- Monitoring storage conditions is essential to ensure the quality and freshness of powder spices.
- Conduct monitoring by performing Visual Inspection (that detect the color changes, clumping or caking, Mold or mildew), conducting sensory Evaluation and measuring of Temperature and Humidity



Application of learning 3.3.

Imagine you are a quality control inspector at a spice processing school's workshop. Your task is to conduct select the appropriate tools for a monitoring of powder spice store, conduct monitoring of storage conditions and record all collected data.

Checklist

Criteria	Indicator	Yes	No
1. Visual inspection is well conducted	1.1 Color change is monitored		
	1.2 Clamping and caking are analyzed		
	1.3 Molds and mildew are analyzed		
2. Temperature and humidity are well monitored	2.1 Appropriate thermometer and hygrometer are selected		
	2.2 Temperature gauge is monitored		
	2.3 Hygrometer is monitored		
	2.4 Results are recorded and analyzed		



Learning outcome 3 end assessment

Written assessment

A. Multiple Choice Questions

1. Which of the following is NOT a step involved in preparing packaging materials for powder spices?

- a. Washing
- b. Sterilization
- c. Drying
- d. Grinding

Answer: Drying

2. What is the primary purpose of sealing the package containing powder spices?

- a. To prevent moisture loss
- b. To enhance flavor
- c. To increase shelf life
- d. To improve aroma

Answer: To prevent moisture loss

3. Why labelling powder is spices important?

- a. To provide consumer information
- b. To comply with regulations
- c. To enhance product appearance
- d. All of the above

Answer: All of the above

4. Which of the following is NOT a typical storage condition for powder spices?

- a. Cool, dry place
- b. Direct sunlight
- c. Away from strong odors
- d. Sealed containers

Answer: Direct sunlight

5. What is the purpose of monitoring storage conditions for powder spices?

- a. To ensure quality and freshness
- b. To prevent spoilage
- c. To extend shelf life
- d. All of the above

Answer: all of the above

B. Match the following terms in column A with their corresponding definitions or purposes in column B:

Answer	Column A	Column B
1.....v	1. Preparation of packaging materials	i. Providing necessary condition that ensure product to last longer
2.....iii	2. Labeling of powder spices	ii. Placing the spices into the prepared packaging materials
3.....vi	3. Sealing of the package	iii. Providing necessary product information on the label
4.....vii	4. Protected from light	iv. The process of preventing the growth of microorganisms.
5.....i	5. Storage of powder spices	v. Washing, sterilization, and drying of packaging materials
6.....iv	6. Sterilization	vi. Ensuring the package is airtight and prevents contamination
7.....ii	7. Filling of powder spices	vii. Slows down chemical reactions.

Practical assessment

As a trainee in level 4 Food processing, your team has recently produced a batch of onion powder that needs to be stored properly for future use. Your task is to go in a spice-processing workshop, select suitable packaging materials, prepare the packaging, accurately fill the onion powder, design and apply informative labels, store the spices in a suitable environment, and regularly monitor storage conditions to ensure the product's quality and freshness.

Checklist

Criteria	Indicator	Yes	No
1. Materials, Tools and Ingredients are well selected according to the requirements	1.1 Tools and equipment are selected		
	1.2 Materials are selected		
	1.3 Cleaning agents are selected		
	1.4 Ingredients are selected		
	1.5 Raw spices are selected		
	1.6 Packaging material are selected		
2. Workplace is well arranged according to Production line	2.1 Tools and equipment are cleaned		
	2.2 Work area is cleaned		
	2.3 Workplace is arranged		
3. Fresh ingredients are accurately prepared based on product specification	3.1 Sorting is done		
	3.2 Grading done		
	3.3 Weighing is done		
	3.4 Washing is done		
	3.5 Peeling is done		
	3.6 Chopping is performed done		
4. Fresh Spices are effectively dried according to procedures	4.1 Blanching is done		
	4.2 Soaking is done		
	4.3 Drying temperature is respected		
	4.4 Moisture content of 7% -10% is achieved		
5. Dried spices are well ground based on grinding requirements	5.1 Grinding is performed		
	5.2 Sieving is done		
	5.3 Required particle sizes are achieved		
6. Coloring and flavouring are properly performed according to restored according to	6.1 Appropriate permitted food colorants is selected		
	6.2 A correct proportion of colorant is applied		
	6.3 Color post application is reassessed		
	6.4 Appropriate permitted flavored is selected		
	6.5 A correct proportion of flavor is applied		
	6.6 Flavor post application is reassessed		

the customer preferences			
7. Powder spices are properly packaged according to the product requirements	7.1 Packaging materials are washed		
	7.2 Packaging materials are Sterilized		
	7.3 Packaging materials are dried		
	7.4 Appropriate quantity is measured		
	7.5 Airspace is left		
	7.6 Appropriate seal is selected		
	7.7 Sealing is applied		
	7.8 Powder spice is labeled		
8. Powder spices are well stored according to the storage conditions	8.1 Visual inspection is conducted		
	8.2 Temperature is monitored		
	8.3 Humidity is monitored		

END



Further information to the trainer

Cauvain, S., & Young, L. S. (2008). Technology of breadmaking (2nd Ed.). Springer.

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Rahman, M. S. (2007). Handbook of food preservation (2nd Ed.). CRC Press.

Pruthi, J. S. (2001). Spices and condiments: Chemistry, microbiology, technology. Academic Press.

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