

MAKHANA PACKAGING



AATMANIRBHAR BHARAT

**PM Formalisation of Micro Food Processing
Enterprises Scheme (PM FME Scheme)**

INTRODUCTION

- The Foxnut or commonly name as Makhana (***Euryale ferox Salisb.***) is the seed of an aquatic herb is a monotypic genus of the family Nymphaeaceae.
- Makhana is the seed of a cash aquatic crop. Makhana possessed high nutritional value and many medical and health protection effects.
- In India it is mainly consumed in popped form and in China it is consumed medicinally or for food.
- Popped Makhana is one of the most common dry fruits utilized by the people due to low fat content, high contents of carbohydrates, protein and minerals.



FACTORS INFLUENCING KEEPING QUALITY OF MAKHANA AND ITS PRODUCTS

Quality of seed depends upon the

- a) Processing practices
- b) Initial moisture content: must have less moisture content.
- c) Temperature of storage: must be stored at low temperature.
- d) Storage for longer duration reduce the quality.
- e) Method of packaging: Higher the air-content in the packet resulted in the lower keeping quality.

DESIRABLE CHARACTERISTICS OF PACKAGING MATERIAL FOR MAKHANA AND ITS PRODUCTS

- a) Must compile Food Safety and Standards (Packaging and Labelling) Regulations, 2011
- b) Packaging material should not react with products
- c) Available at low cost
- d) Non toxic packaging material
- e) Should not allow printing ink to penetrate into the product
- f) Protect against tempering
- g) Protects against spoilage causing agents
- h) Withstand wear and tear during transportation
- i) Convenience in use
- j) Should be reuse or recyclable
- k) Compatible with the packaging machine

PACKAGING

- Packaging is an important part of food manufacturing process. It protect the food products from physical ,chemical, biological damages.
- Without packaging, materials handling would be a messy, inefficient and costly exercise and modern consumer marketing would be virtually impossible.
- Packaging Institute International defined packaging as the enclosure of products, items or packages in a wrapped pouch, bag, box, cup, tray, can, tube, bottle or other container form to perform one or more of the following functions: containment, protection, preservation, communication, utility and performance. If the device or container performed one or more of these functions, it was considered a package.

NEED OF PACKAGING

- **CONTAINMENT** : protecting the environment from the myriad of products that are moved from one place to another.
- **PROTECTION** : to protect its contents from outside environmental influences such as water, water vapor, gases, odors, microorganisms, dust, shocks, vibrations and compressive forces.
- **CONVENIENCE** : Products designed to increase convenience include foods that are prepared and can be cooked or reheated in a very short time, preferably without removing them from their primary package.
- **COMMUNICATION** : Packaging contains a lot of information such name of its manufacturer, product name, terms and uses, date of manufacturing, best before. nutritional information thus helping the consumer to be more informed.

PACKAGING & FOOD SAFETY

- Food packaging is an integral component of food industry and helps to store food in hygienic manner, it can at times be a cause of concern for food safety.
- Some packaging materials such as certain types of plastic, polythenes, and styrofoam can release toxins when they are heated and can be dangerous to consumers.
- Packaging materials which are irradiated (along with food) can transfer unsafe non food substances into the food.
- Food packaging makes use of a variety of substances, including dyes for printing colourful labels, and glues and adhesives for keeping packaging closed.
- To protect consumers effectively, the relevant authority individually certifies each of these food packaging materials subjecting them to rigorous testing protocols.

TYPES OF PACKAGING

- **PRIMARY PACKAGING** : Primary package are those package which directly came into contact with food products. It provides first or initial layer of protection to the food products. Examples of primary packaging includes parchment paper, greaseproof paper, paperboard cartons, and plastic pouches.
- **SECONDARY PACKAGE** : Secondary package are those package which surrounds or contains the primary package. Ex. Corrugated case, Boxes.
- **TERTIARY PACKAGE** : It contains number of secondary package together. Mainly used for bulk handling of food products.

- For bulk packaging, there are no specifications. Commonly, jute fabrics such as hessian & Jumbo bags are generally used for bulk packaging.
- For retail packaging variety of packaging materials are available based on design, strength & price.

S. No	Type of Packing	Strength	Cost
01	Polyethylene	Ok	Low
02	Pet Bottle	Good	High
03	Tin Can	Excellent	High
04	Extruded/Different Layered Film (Poly/PET/HDPE/LDPE/Metalized /Other)	Good	Medium
05	PaperPoard/Cardboard Box	Ok	Medium
06	Aluminium Foil	Good	Medium

PACKAGING MATERIAL FOR MAKHANA AND ITS PRODUCTS

- Packaging of Makhana and its products is mainly done to protect the fennel seeds and its products from outside environment especially air and moisture, so that Makhana and its products can retain aroma, freshness for a longer period of time.
- The shelf life of Makhana and its products depends on the type of package material used for packaging.



PACKAGING MATERIAL FOR MAKHANA AND ITS PRODUCTS

1. TIN CANS:

- Used for customized pack of different capacities.
- Properly lacquered tin cans are must be use.
- Must be sealed properly to maintain the quality & oxidation in the product.
- Higher cost is one of the drawback.



PACKAGING MATERIAL FOR MAKHANA AND ITS PRODUCTS

2. GLASS BOTTLES & JARS:

- Used for 50g to 250g.
- Provide excellent protection
- Not in much use because of their fragility and high weight.
- Higher cost is one of the drawback



PACKAGING MATERIAL FOR MAKHANA AND ITS PRODUCTS

3. LINED CARTON OR STAND ALONE PAPER PACK:

- Available in various shape and size.
- Flexible pouch may be made from laminates or Aluminum along with box is widely used.
- Attractive and economical pack



PACKAGING MATERIAL FOR MAKHANA AND ITS PRODUCTS

5. PET or PVC:

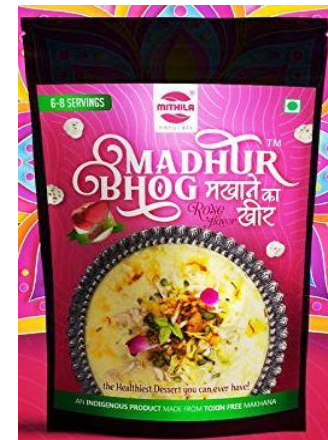
- Mostly used for Popped Makhana and its products packaging because of excellent odour free and gas barrier properties.
- Blow moulded bottles made up of PET or PVC is used.
- Recyclable



PACKAGING MATERIAL FOR MAKHANA AND ITS PRODUCTS

6. PLEXIBLE FILMS/POUCHES/LAMINATES

- Made from laminates or multi layer films.
- Lamination (bonding together) of two or more films improves the appearance, barrier properties or mechanical strength of a package.
- May be in the form of pillow pouch or as self-standing pouches.
- Cheapest than any other packaging system.
- Selection of laminate or a multi layer film is governed primarily by the compatibility of the contact layer, heat-sealing ability and heat-seal strength and shelf life required.



PACKAGING MATERIAL FOR WHOLESALE MAKHANA

6. JUTE /PLASTIC/CHOTH/HDPE WHOLESALE BAG

- Used for Wholesale Package.
- For easy Transportation from one place to another.
- Range from generally 5-15 kg.



PACKAGING MATERIAL CATEGORY IN TERMS OF TEXTURE

- **Rigid** – Caps, trays, jars, bottles and cans.
- **Flexible** – Stand-up packets, Laminates, bags, squeezable tubes, shrink/cling/bubble wraps, vacuum bags and foam trays.
- **Semi-rigid** – Tetra packs, caps/closures and boxes.



PACKAGING MACHINES

Popped Makhana Machine



Flavoured Makhana Machine



Source: Kalyan Machines, Noida (UP)

PACKAGING MACHINES (Tin filling)



Source: China Packaging Machine

SOME RECENT TRENDS IN PACKAGING :

ASEPTIC PACKAGING :

- Aseptic packaging is the filling of sterile containers with a commercially sterile product under aseptic conditions, and then sealing the containers so that re-infection is prevented; that is, so that they are hermetically sealed.
- **Aseptic packaging are used for :**
 - ✓ To take advantage of high temperature.
 - ✓ Increase shelf life of food products at normal temperature.
 - ✓ In package sterilization.

LABELING

- Labeling is a means of performing the communication function of packaging, informing the consumer about nutritional content, net weight, product use and so on.

- Labeling acts as a silent salesman of a company
- Shape and design of the container attracts the customers.

Typical values	100ml contains	250ml contains	%GDA* adult
Energy	199kJ 47kcal	500kJ 120kcal	6% 2000kcal
Protein	0.5g	1.3g	
Carbohydrate	10.5g	26.3g	29%
of which sugars	10.5g	26.3g	
Fat	trace	trace	
of which saturates	trace	trace	
Fibre	trace	trace	
Sodium	trace	trace	
Salt equivalent	trace	trace	

*Guideline daily amounts

PACKAGING & LABELING LAWS - FSSAI

General requirement for Packaging:

- Every pre packaged food shall carry a label containing information as required here under Food Safety and Standards (Packaging and labelling) Regulations.
- The particulars of declaration required under these Regulations to be specified on the label shall be in English or Hindi in Devnagri script: Provided that nothing herein contained shall prevent the use of any other language in addition to the language required under this regulation.
- Label in pre-packaged foods shall be applied in such a manner that they will not become separated from the container.
- Contents on the label shall be clear, prominent, indelible and readily legible by the consumer under normal conditions of purchase and use.

PACKAGING & LABELING LAWS - FSSAI

Every prepackaged food must carry a label containing
(पैकेज खाद्य पदार्थ पर लगे लेबल में होना चाहिए)



1. Name of the food
(खाद्य का नाम)
2. List of ingredients
(संघटकों की सूची)
3. Nutritional Information
(पोषणकारी जानकारी)
4. Declaration regarding Vegetarian and Non Vegetarian
(शाकाहारी व मांसाहारी संबंधी घोषणा)
5. Declaration regarding food additives
(खाद्य योजकों संबंधी घोषणा)
6. Net weight/quantity
(शुद्ध परिमाण)
7. Lot/code/batch identification number
(लॉट/कोड/बैच नं. पहचान)
8. Date of manufacture
(विनिर्माण की तिथि)
9. Best before/Use by date
(से पूर्व उत्तम/तारीख तक प्रयोग)
10. Instructions of use
(प्रयोग करने के लिए अनुदेश)
11. Name and complete address of the manufacturer
(विनिर्माता का नाम व पूरा पता)



PACKAGING & LABELING LAWS - FSSAI

Labeling should contain following information:

- FSSAI License/Registration Number
- Name of the Food
- List of the Ingredients
- Nutritional Information
- Net Weight/Quantity
- Lot/Code/Batch Identification number
- Date/Month/ of Manufacturer
- Best Before or Use by Date or Date of Expiry
- Declaration regarding Vegetarian & Non Vegetarian
- Instruction of Use
- Declaration regarding Food Additives
- Name & Complete Address of the Manufacturer
- Importer Details and Code Number

STORAGE OF MAKHANA AND ITS PRODUCTS

- The products must be stored in a damp free storehouses.
- No insecticide should, be used directly on the dried seed.
- Pest control must be adopted for the storage area.
- Makhana and its products can be stored in cool dry room .
- Should be periodically checked for moisture & other quality parameters.
- The packet of the Makhana and its products must be impermeable to the water and oxygen to enhance its shelf life.



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