Ministry of Food Processing Industries
Government of India

NIFTEM
KNOWLEDGE • INNOVATION • OUTREACH

URAD BASED PRODUCTS- PROCESSINGING

AATMANIRBHAR BHARAT

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

INTRODUCTION

Scientific name: ***Vigna mungo***

Family: **Fabaceae**

Common name: **Black gram, Urad bean, ulundu paruppa, minapa pappu**

Origin: **South Asia**

INTRODUCTION

- Black gram is one of the important pulse crop grown almost every region of the country. It is also called as urad dal which is consumed in various form such as dal, papad, badi, namkeen, etc.
- Black is very nutritious thus it is also used as fodder specially for milch animal.
- It contain high amount of lysine which make it excellent complement to rice in terms of balanced human nutrition.

GROWING CONDITIONS

- Urad bean is mostly grown in tropical region which requires hot and humid climate for best growth.
- In northern India urad bean is cultivated mostly in rainy and summer season, in southern and central region of India it is cultivated during winter and rainy season while it grown in winter in eastern part of India.

VARIETIES OF URAD BEAN

State	Varieties		
	Kharif	Rabi	spring/summer
Andhra Pradesh	Pant Urd-31, IPU 2-43, LBG 685, LBG 625	TU 94-2, LBG 623, LBG 709, LBG 611	TU 94-2, LBG 623, LBG 709, LBG 611
Assam	PU-30, WBU -108, IPU 94-1 (Uttara)	-	-
Bihar & Jharkhand	Pant Urd 31, WBU 108, IPU 94-1 (Uttara), Birsa Urd 1, PU-30	-	Pant Urd 31, WBU-109, KU 91-2 (AZAD Urd 1
Gujarat	Ku 96-3, TPU-4, AKU-4 (Melghat), GU-1, KUG-479, UH 01, Mash-414	-	-
H.P	Pant Urd 31, Pant Urd 40		

VARIETIES OF URAD BEAN

State	Varieties		
	Kharif	Rabi	spring/summer
Haryana	KU-300 (Shekhar 2), IPU 94- 1 (Uttara	-	-
Karnataka	IPU 02-43, WBU-108, KU-301, LBG 402	IPU 2-43, WBU-108, KU-301	-
M.P. & C.G	Pant Urd-30, JU-3, KU 96-3, TPU-4, JU-2, Khargone-3	Pant Urd 31	Pant Urd 31
Maharashtra	KU 96-3, TPU 4, AKU-4 (Melghat), AKU-15	-	-
Odisha	IPU 02-43, WBU-108, KU 301	B-3-8-8, OBG-17, Mash 338	B-3-8-8, OBG-17, Mash 338

VARIETIES OF URAD BEAN

State	Varieties		
	Kharif	Rabi	spring/summer
Punjab	WBU 108, IPU 94-1 (Uttara), Mash 338, Mash 414	-	KU 300 (Shekhar 2), KUG 479
Rajasthan	Pant Urd-31, WBU 108, IPU 94-1 (Uttara)	-	KU 300 (Shekhar 2), KUG 479
U.P. & Uttarakhand	Pant Urd-40, WBU-108, IPU 94-1 (Uttara)	-	KU 300, WBU 109, KU 91 (Azad Urd 2) KUG-479, Narendra Urd 1
Tamil Nadu	IPU 02-43, Vamban-4, Vamban-7	Vamban-3, TU 94-2	Vamban 3, TU 94-2, Vamban 5, Vamban 2
West Bengal	Pant Urd 31, WBU 108, IPU 94-1	Pant Urd-31, WBU-190, KU 92-	Pant Urd 31, WBU 109, KU

PRODUCTION TREND (INDIAN SCENARIO)

- Cultivation of urad bean is done on approximately 31.29 lakh hectare of lands and the total production recorded as 18.29 lakh tones in India during 2012-17.
- Out of this Uttar Pradesh is the largest producer of urad bean in India which is constitute 17.88% followed by Andhra Pradesh 16.75%.
- The highest yield was recorded by the state of Bihar (898 kg/ha) followed by Sikkim (895 kg/ha) and Jharkhand (890 kg/ha) the National yield average was (585 kg/ha).

NUTRITIONAL COMPOSITION OF URAD BEAN

Constituent	Content (per 100g dry seed)
Protein (g)	25.21
Carbohydrates (g)	58.99
Lipids (g)	1.64
Calcium (mg)	138
Phosphorus (mg)	379
Magnesium (mg)	267
Iron (mg)	7.57
Thiamine (mg)	0.273
Riboflavin (mg)	0.254
Niacin (mg)	1.447

MANUFACTURING OF PAPAD FROM URAD BEAN

GRINDING OF URAD BEAN

⇩

MIXING

⇩

KNEADING OF DOUGH

⇩

SHAPING

⇩

DRYING

MANUFACTURING OF PAPAD FROM URAD BEAN

1. Cleaning of urad bean :

- ✓ urad bean are first cleaned for getting high amount and good quality of flour.
- ✓ For cleaning purpose mostly reciprocating air-screen cleaners and reel screen cleaners are used.
- ✓ Reciprocating air cleaner has two screen having different size of perforation which are used for separation of lighter materials like dust, leaves, husk etc.
- ✓ In reel screen cleaner there 2-4 cylindrical compartments, having different size of perforation screen which are fitted on a 5-7.5 mm diameter shaft. The cylindrical screen drum rotates at 5-35 rpm.

MANUFACTURING OF PAPAD FROM URAD BEAN

2. Drying :

- ✓ Drying of urad bean is necessary reduce the moisture content.
- ✓ The process of drying can be performed either through Sun or mechanically.
- ✓ Sun drying process usually take 1-6 days where urad bean by spread over the floor/roof in a 5 to 7.5 cm thick layer and followed by manual stirring.
- ✓ Mechanical drying is performed either batch type or continuous flow type at temperature ranges from 600 -1200ºC.

MANUFACTURING OF PAPAD FROM URAD BEAN

3. De-hulling : Removal of the seed coat is beneficial for the following reasons:

- ✓ Reduces anti-nutritional factors, such as tannins and insoluble fiber (non-nutrients that can bind protein and other nutrients), thereby improving nutritional quality, protein digestibility, texture and palatability.
- ✓ Removes astringent taste caused by tannins.
- ✓ Allows the production of higher quality flours, without browning/speckling (also increases leavening ability).

MANUFACTURING OF PAPAD FROM URAD BEAN

4. Grinding of urad bean

- ✓ Grinding of bean is mainly done with help of grinding machine and it should be smoothly grind so that texture of papad will be of good quality.

5. Mixing :

- ✓ After grinding, powder obtained from grinder should be properly mixed along with all the required ingredients to make powder more uniform.

6. Kneading

- ✓ urad bean powder should be kneaded properly and during this process addition of water in to dough should be carefully monitored so that amount moisture should be present in appropriate quantity.

MANUFACTURING OF PAPAD FROM URAD BEAN

7. Shaping :

- ✓ The papad press is machinery operated. The papad dough is made from urad bean flour, salt, carbonates, farinaceous material and water. The dough is made into sheet form by press machine into 1-mm thickness and cut into circular shape by machine. The pressed circular shaped papad is dried to 14-15% moisture level at room temperature using dryer machine.

8. Packaging :

- ✓ The papad with a 14-15 % moisture label is packed in polythene sheets using a hand sealing machine and sent to the market after final packaging

MANUFACTURING OF BHUJIA FROM URAD BEAN

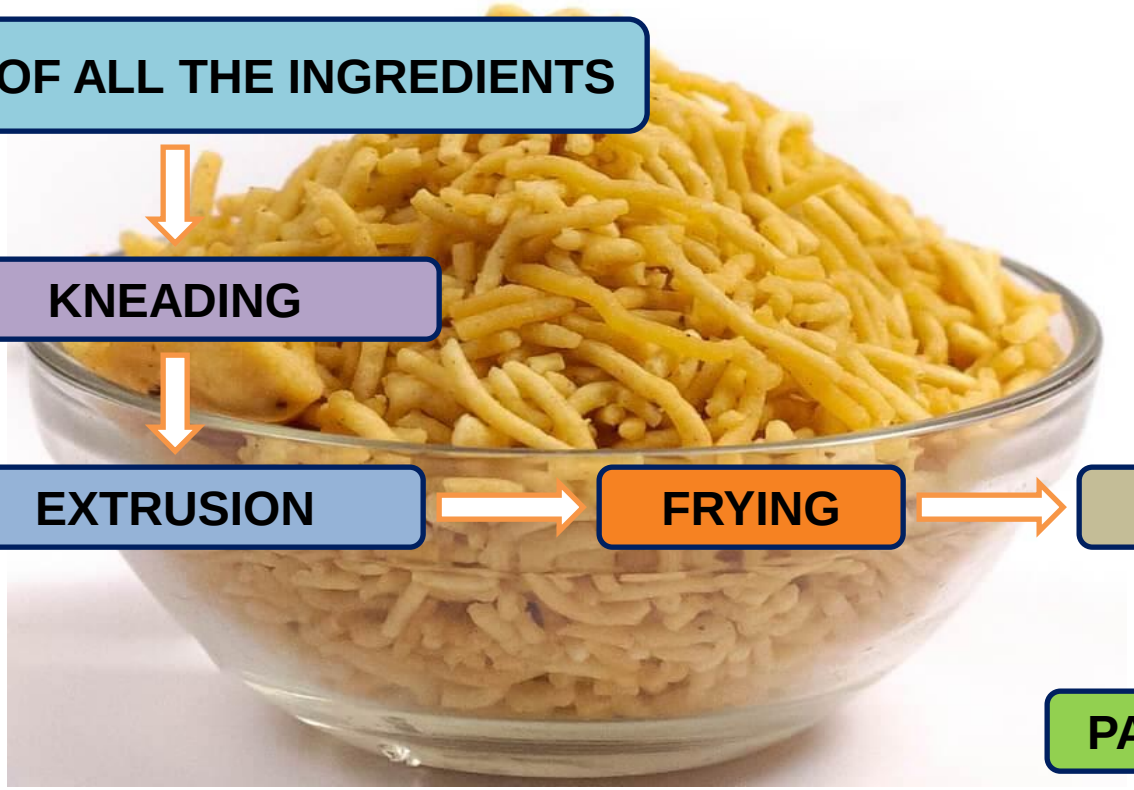
GRINDING OF URAD BEAN

ADDITION OF ALL THE INGREDIENTS

KNEADING

EXTRUSION → FRYING → DRYING

PACKAGING



MANUFACTURING OF BHUJIA FROM URAD BEAN

1. **Grinding of urad bean :**

- Grinding of bean is mainly done with help of grinding machine and it should be smoothly grind so that texture of bhujia will be of good quality.

2. Addition of ingredients :

- Ingredients such as such as salt and spices are added in appropriate quantity. While adding these ingredients proper regulation of FSSAI must be followed.

3. Kneading

- urad bean powder should be kneaded properly and during this process addition of water in to dough should be carefully monitored so that amount moisture should be present in appropriate quantity.

MANUFACTURING OF BHUJIA FROM URAD BEAN

4. Extrusion :

- After kneading, dough is passed through an equipment called as extruder. Extrusion is done to cut down the dough in a proper shape.

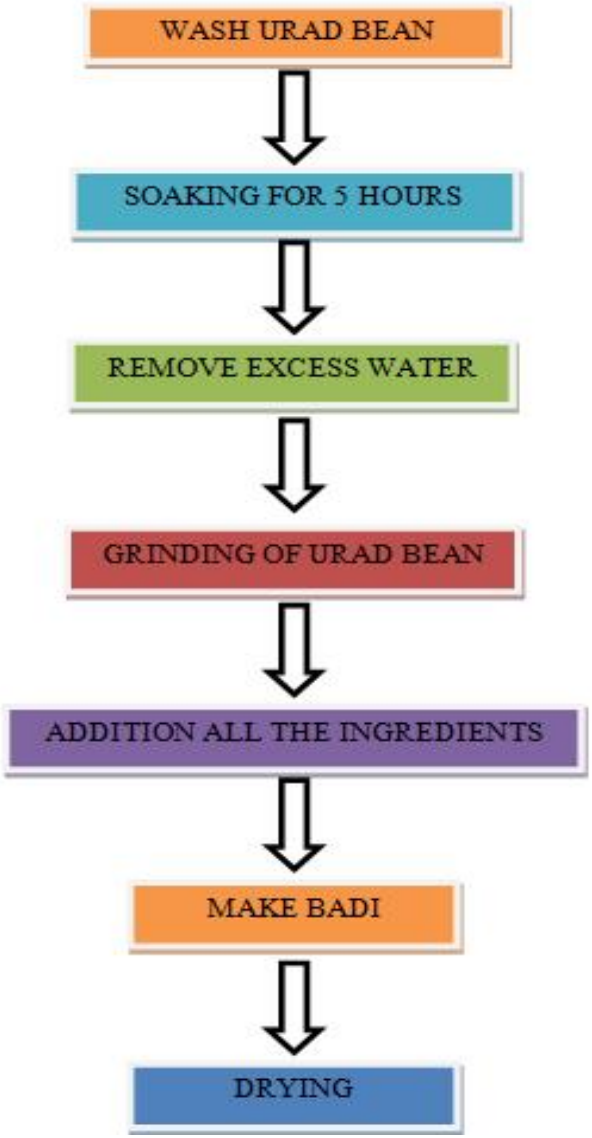
5. Frying :

- Product obtained from extruder are fried deeply in oil.

6. Drying :

- ✓ It is done to lower down temperature f fried product as well as drying process also remove some amount of oil at the same time.

MANUFACTURING OF MASALA BADI FROM URAD



EQUIPMENT FOR URAD BEAN PROCESSING

1. WEIGHING MACHINE :

- For getting good quality of product, all the ingredients should be properly weighed with the help of digital weighing machine.

2. SIEVE :

- It used for sieving flout of urad bean so that only fine powder can be utilized for manufacturing purpose. Without sieving coarse powder will be mixed up

EQUIPMENT FOR URAD BEAN PROCESSING

3. DOUGH MAKER :

- Dough maker is used for dough preparation at a larger quantity and in lesser time. All the ingredients are mixed together uniformly with help of dough maker.

4. EXTRUDER MACHINE :

- It is used for cutting the dough in to thick and small shape which will be appropriate for frying process.

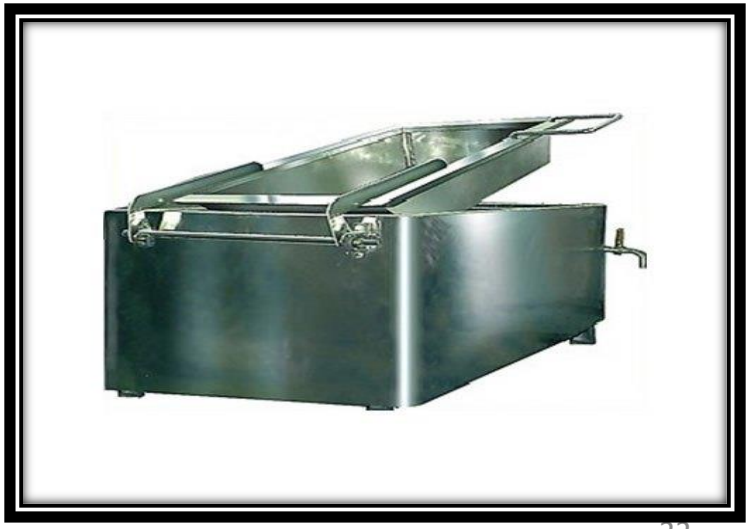
EQUIPMENT FOR URAD BEAN PROCESSING

5. SHEETING AND CUTTING MACHINE :

- It used to roll the papad and cut in to proper shape.

6. FRYER :

- Fryer is used for deep frying of bhujia.



EQUIPMENT FOR URAD BEAN PROCESSING

7. PAPAD DRYING MACHINE:

- Papad drying machine is ysed for drying of papad before final packaging.

HEALTH BENEFITS

- ✓ Have anti inflammatory properties.
- ✓ Rich source of protein.
- ✓ Prevent constipation.
- ✓ Boost immunity.
- ✓ Lowering the blood pressure.
- ✓ promoting Healthy Skin.
- ✓ Consumption of urad helps in reducing LDL (bad) cholesterol.
- ✓ preventing the symptoms of diabetes.

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