

PROCESSING OF KING CHILLI PICKLE



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Introduction

King chilli (U-Morok) is native to the north eastern region of India and subsequently the geographical indication (GI) of goods tag for this chilli has been obtained by the Nagaland State Government.

King Chilli also known as ghost pepper, ghost chilli, naga jolokia and bhoot jolokia is among one of the hottest chilli in the world.

It is grown in districts of Kohima, Mon and Peren of Nagaland, and also been cultivated in parts of Manipur (Tamenlong, Ukhrul, Churachanpur etc) and Assam (Golaghat & Tepur districts).

Harvesting period - May-July (plain area like Assam) and September-October (Hilly area like Nagaland and Manipur)

Common name : Naga Mircha or king chilli

Scientific name : *Capsicum chinense* Jacq

Family : Solanaceae

King chilli entered in "Guinness book of world records" (measuring 855,000 scoville units) beating the "Mexican red savana habaneros" (5,77,000 scoville units).

It is consumed in fresh or dried form and used for its distinct flavour and aroma in the various culinary preparations.

Due to its distinct taste and pungency people of North East India commonly use this chilli for making pickles and adding hotness to non-vegetarian food stuffs. is used as spice, food, medicine



Chillies have anticancer, anti diabetic, anti obesity effect. It improves heart health by preventing/delaying oxidation of bad cholesterol, reduce rhinitis and bronchitis through thinning of mucus, and also reduce chronic pain.

In recent years this crop is gaining importance because its high content of capsaicin (3-5%) as compared to any other Indian chilli.

The secondary metabolite group, capsaicinoids, are produced solely in the fruit of members of the genus *Capsicum*.



Capsaicin and hydroxycapsaicin, the major constituents of capsaicinoids, are highly desirable and essential for spice, food, medicinal, and industrial purposes

Capsaicin is also the active principle which accounts for the pharmaceutical properties of chillies.

Bhut Jolokia is characterized by very high capsaicinoid content, ranging from 2.45%. As a result, it is an ideal chilli variety of India for extraction of capsaicin.



King chillis have a soft texture and with high water content (85%) hence its quality deteriorated overtime.

Some of the processed products are whole dried form, ground or powdered form, crushed, paste, sauce, chutney, oleoresin, essential oil, pickles, in oil or brine, etc.



Nutritive value of Dry King Chilli

Sl.No	Parameters	Nutritive value
1	Fibre	8.90 %
2	Fat	3.30 %
3	Protein	4.46 %
4	Ascorbate	6.26 mg/g
5	Capsaicin	7.65 %
6	Proline	75.82 μ mol/g
7	Carotenoid	3.99 mg/g

Source: Int.J.Curr.Microbiol.App.Sci (2018) 7(6): 1-8

The common properties of chilli are Vitamins C, A, B and B6. They contain high percentage of potassium, magnesium and iron as well as anti-ulcer properties.

Pickling Technique

- The preservation of food in common salt or in vinegar is known as pickling
- Most ancient methods of preserving fruits and vegetables.
- They are good appetizers and add to the palatability of a meal
- They stimulate the flow of gastric juice and thus help in digestion.
- Fruits are generally preserved in sweetened and spiced vinegar, while vegetables are preserved in salt (brine).
- Soluble material (fermentable sugars and minerals) present in them diffuses into the brine by osmosis.
- Sugars are converted into lactic acid by LAB.



Brining

- Brining is the most important step in pickling.
- The growth of a majority of spoilage organisms is inhibited by brine containing 15 percent salt.
- Lactic acid bacteria, which are salt-tolerant, can thrive in brine of 8-10 percent strength.
- Fermentation takes place to some extent up to 15 per cent but stops at 20 percent strength.



Pickling Technique

How are pickle preserved with mixture of salt, oil, spices and vinegar

- salt – osmosis
- oil – anerobic condition
- spices – anti microbial agents
- vinegar – acidic condition



Problems in pickling

- Bitter taste: Use of strong vinegar or excess spice or prolonged cooking of spices
- Dull and faded product : use of inferior quality materials or insufficient curing
- Shrivelling: It occurs when vegetables are placed directly in a very strong solution of salt or sugar or vinegar.



- Scum formation: due to the growth of wild yeast. This delays the formation of lactic acid and also helps the growth of putrefactive bacteria which cause softness and slipperiness
- Softness and slipperiness: due to inadequate covering with brine or the use of weak brine
- Blackening: It is due to the iron in the brine or in the process equipment reacting with the ingredients used in pickling. Certain microorganisms also cause blackening.



Ingredients required

King chilli	1 kg
Salt	100 kg
Mustard oil	350 ml
Garlic chopped	50 gm
Fenugreek powder	25 gm
Nigella seed	15 gm
Aniseed powder	25 gm





Sorting, Grading and weighing of King Chilli



Washing by Cleaning in bubble washer



Put in brine solution for 2 days



Wash and cut into pieces by vegetable cutter



Dry in drier at 50° C for 1 hour



Weighed required spices and grind separately



Heat oil and add spices



Cool the mix



Mix the chilly pieces with oil and spices



Add salt and vinegar



Bottling/Packaging



Storage and Dispatch

Flowchart for Pickle



Pickles means the preparation made from fruits or vegetables or other edible plant material including mushrooms.

It must be free from insect damage or fungal infection.

Can be prepared singly or in combination preserved in salt, acid, sugar or any combination of the three.

The pickle may contain onion, garlic, ginger, sugar jaggery, edible vegetable oil, green or red chillies, spices, spice extracts/oil, limejuice, vinegar/ acetic acid, citric acid, dry fruits and nuts.

It shall be free from copper, mineral acid, alum, synthetic colours and shall show no sign of fermentation.

Pickles may be of combinations as given below:

(i) Pickles in Citrus juice or Brine conforming to the following requirements:—

- (a) Drained Weight Not less than 60.0 percent
- (b) Sodium Chloride content when packed in Brine Not less than 12.0 percent
- (c) Acidity as Citric Acid when packed In Citrus Juice Not less than 1.2 percent

(ii) Pickles in Oil

- (a) Drained Weight Not less than 60.0 percent
- (b) Fruit and Vegetable pieces shall be practically remaining submerged in oil

(iii) Pickles in Vinegar

- (a) Drained Weight Not less than 60.0 percent
- (b) Acidity of vinegar as acetic acid Not less than 2.0 percent

(iv) Pickle without medium means the pickles

may contain onion, garlic, ginger, sugar jaggery, edible vegetable oil, green or red chillies, spices, spice extracts/oil, limejuice, vinegar/ acetic acid, citric acid, dry fruits and nuts

Preservatives for Pickles and chutneys made from fruits or vegetables

Benzoic Acid	-	250 ppm
Sulphur dioxide	-	100 ppm
Calcium chloride, calcium carbonate	-	350 ppm
Acetic, citric, malic acid	-	GMP

PM FME Scheme



M O F P I

AATMANIRBHAR BHARAT

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



“A combined resolve of 130 crore citizens is to make India self-reliant. The way ahead lies in LOCAL- Local Manufacturing, Local Markets, Local Supply Chain. Local is not merely a need but a responsibility”

Narendra Modi, Prime Minister

**Opening gates for growth
of Micro Enterprises in Food Industry**




Harsimrat Kaur Baidal
Minister of Food Processing Industries

Rameswar Teji
Minister of State,
Food Processing Industries

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LOCAL**



For the details regarding the PM FME scheme, scheme guidelines, various food processing demonstration videos and DPRs, please visit our weblinks:

<https://mofpi.nic.in/pmfme/> and <http://www.iifpt.edu.in/ab-pmfme.php>



Thank You All!