Ministry of Food Processing Industries
Government of India

NIFTEM
KNOWLEDGE • INNOVATION • OUTREACH

HARRA- PROCESSING

AATMANIRBHAR BHARAT

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

INTRODUCTION

Scientific name : Terminalia chebula

Common name : Haritaki, Harre, Harad, Harar , Katukka, harra, Haritaki, Harda, Hireda , Hakeka, Harar , Ammai, Amutam, Aritaki, Pethiyam, Varikkai, Karakkaya; Halela.

Region : Dhaka, Bangladesh.

INTRODUCTION

- 'Harra' (Terminalia chebula) belongs to deciduous tree family and used in various medicinal formulations due to its therapeutic characteristics.
- It contains numerous Phyto -active components which have shown healing properties against many diseases.
- 'Harra' is one of the essential components of Unani, Ayurveda and Homeopathic medicines. Harra containing medicines are very popular in many Asian and African countries.

TRADITIONAL APPLICATIONS

- ✓ Use of harra Fruits has shown to reduce swelling. it helps in fastening the healing process .
- ✓ Prevent pus from accumulating in skin related diseases.
- ✓ Helpful in healing burn wounds effectively.
- ✓ Harra fruit has anti-inflammatory property and can in applied in conjunctivitis for pain reliving purpose..
- ✓ Used as mouthwash due to anti microbial properties.
- ✓ Harra is also used as anti-astringent.

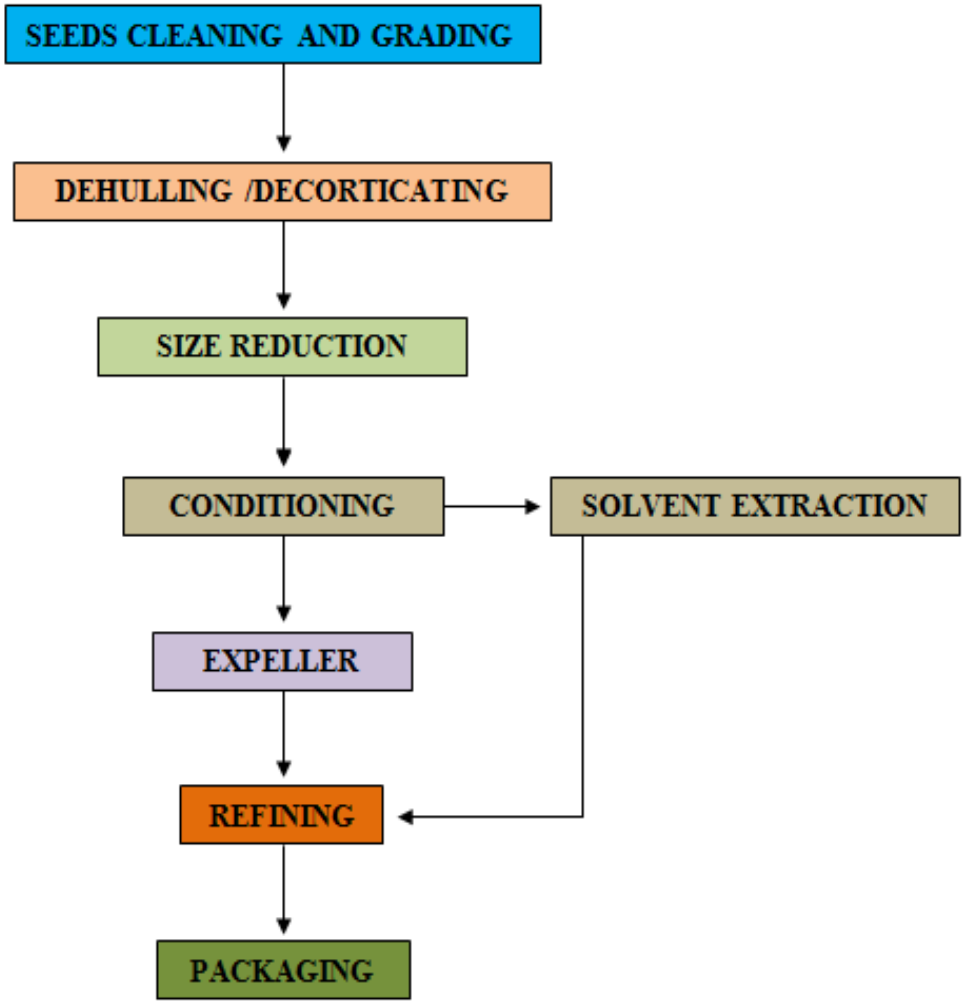
PHARMACOLOGICAL PROPERTIES OF HARRA

- Harra contains anti-bacterial compounds namely Gallic acid and ethyl ester.
- Harra shows number of anti fungal properties against dermatophytes and yeasts.
- Drug formulation made form a crude of *harra shows* anti-amoebic effect in rats.
- Chebulagic acid present in harra , showed potent inhibition against malignant cells lines and It also showed anti-proliferative activity against various cancer causing cells in recent studies.
- Harra is an excellent source of anti oxidants, and its components like tri-ethyl-chebulate shows strong antioxidant and free-radical scavenger properties.

PHARMACOLOGICAL PROPERTIES OF HARRA

- Extracts of harra has found successful in reducing the blood sugar level in diabetic rats significantly.
- Pretreatment of animals with harra extracts in experiments resulted in reduction in lesion index and total affected area and percentage of lesion.
- Application of harra helps significantly in inhibition of joint swelling and pain respectively.
- Extract of the leaves of *Terminalia chebula* showed faster healing of rat skin wounds in some researches.
- Extract of the fruit of *Terminalia chebula* had shows cardio-protective effect .

EXTRACTION OF OIL FROM HARRA



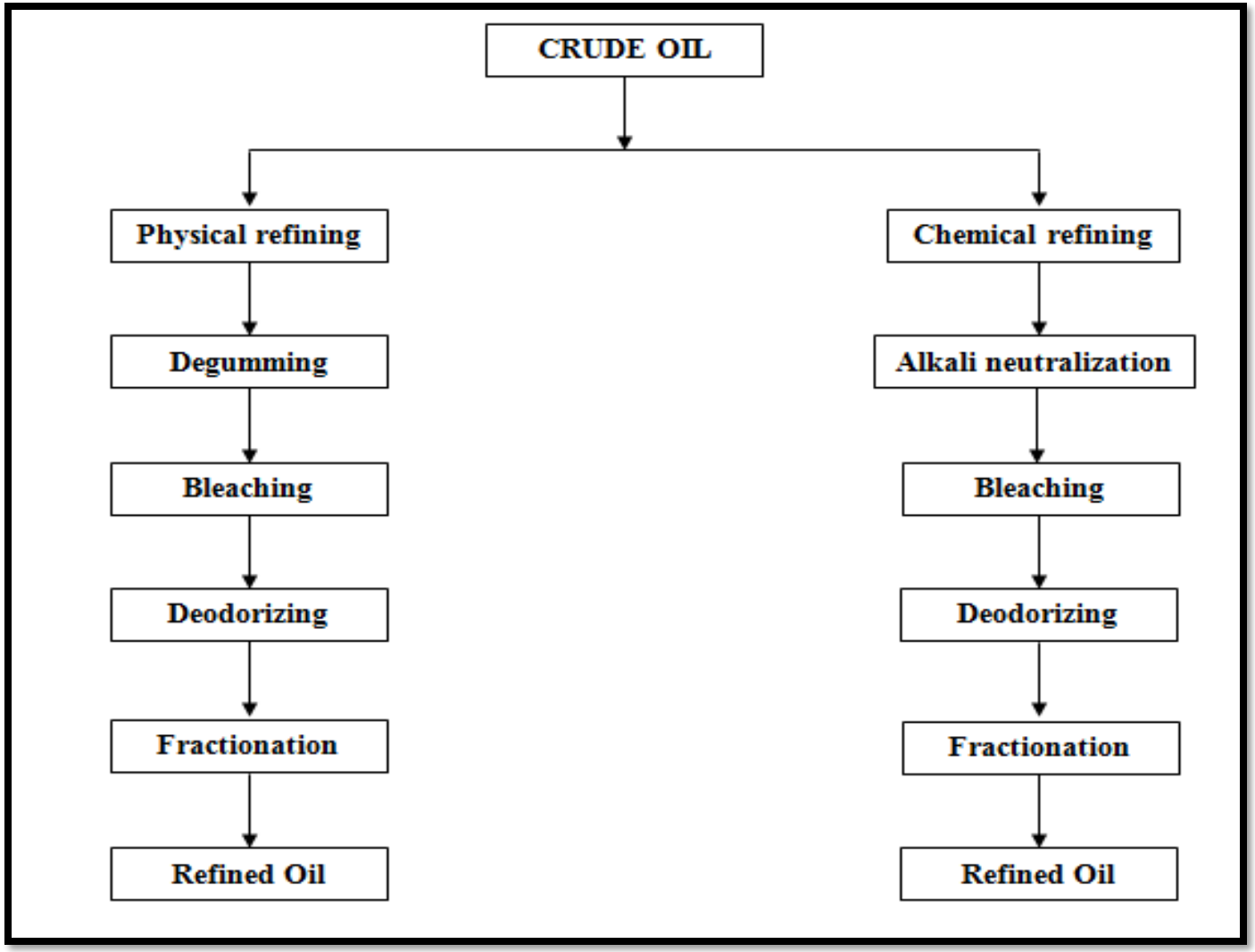
EXTRACTION OF OIL FROM HARRA

- **CLEANING :** The first preparation step is cleaning to remove foreign materials from the seeds. This includes the separation of plant tissues, pebbles, dust, etc. to protect the processing equipment and enable the production of high quality soy products. Some weed seeds have been shown to reduce the oxidative stability of the extracted oil if they are not removed.
- **DRYING :** To remove the hull effectively a moisture content of 10% is needed, which requires a drying process prior to dehulling. Heated air is distributed through the oil seeds to achieve some loss of water, followed by cooler air, which removes the residual moisture laden air.

EXTRACTION OF OIL FROM HARRA

- **DEHULLING :** De-hulling operation is performed for the removal of seed coat which also helps in reducing the anti-nutritional factors.
- **CONDITIONING :** Conditioning is done with the help of heat and moisture to obtain the optimum plasticity necessary for flake production, prior to oil extraction.
- **EXTRACTION :** Extraction of oil from the mash is done with the help of screw, hydraulic, or centrifugal presses, this method is known as dry method. Extraction of oil can also be done through wet method, where hot water as a liquid is used to extract oil from ruptured cell of oil seeds.

PROCESS OF OIL REFINING



PROCESS OF OIL REFINING

- **ALKALI NEUTRALIZATION :** To reduce free fatty acids and polar lipids in crude oil, it is treated with solution called sodium hydroxide or sodium carbonate and the process is called as alkali neutralization or alkali refining.
- **DEGUMMING :** Alkali neutralization is not alone sufficient for removal of all the impurities thus the process of degumming is performed in both i.e. physical refining and chemical refining. Degumming is mainly done to target impurities like phospholipids and other polar lipids (gums). Removal of gums are done with the help of centrifugation.

PROCESS OF OIL REFINING

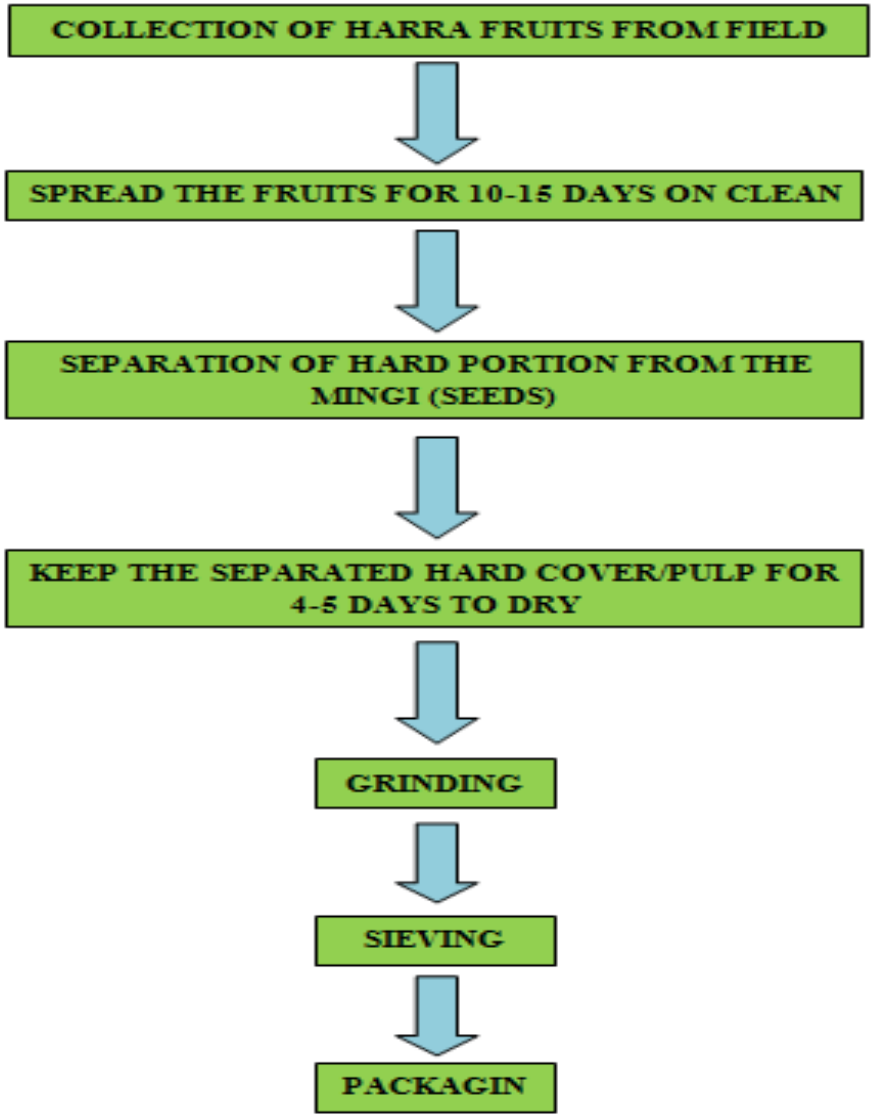
- **BLEACHING :** Like degumming, bleaching also an important steps of physical refining and chemical refining. The process of bleaching is performed for the removal of pigment by using charcoal or clay.

- **DEODORIZING :** Deodorizing is done by steam distillation and used for removing those products which are volatile in nature. The process of deodorizing is carried out at 230ºC for 2 hours followed by cooling of oil and passing it through filter.

PROCESS OF OIL REFINING

- **FRACTIONATION :** Allowing the oil to stand for a time at low temperatures so that glycerides, which naturally occur in the oil, with higher melting points solidify and can then be removed from the oil by filtering. Over time glycerides can degrade releasing fatty acids into the oil increasing the acidity levels and reducing the quality.

FORMATION OF POWDER FROM HARRA FRUITS



FORMATION OF POWDER FROM HARRA FRUITS

- **COLLECTION OF HARRA FRUITS :** Fruits of harra are collected from the farm/fields and transported to the mills for further processing. While collecting the fruits from the tree, it must be ensure that fruits are well matured and do not have any microbial growth over it.

- **CLEANING :** Cleaning of fruits should be done in proper manner so that every foreign particles and dust will be removed. While cleaning one should ensure that the water used for cleaning must be fresh and free from any contaminants. The utensils used for cleaning the fruits must be of food grade quality and non reactive.

FORMATION OF POWDER FROM HARRA FRUITS

- **SPREADING :** After cleaning, fruits are spread for 10 to 15 days for drying. Layer of thickness should be uniform while spreading. Spreading area must be free from hazardous substances or any other thing which may impact the quality of fruits.

- **SEPARATION OF HARD PORTION :** Separation of hard portion from the seeds is done only when the fruits are properly dried. It can be done either manually or mechanically. For smaller amount of fruits the operation is performed manually while for larger amount it is done mechanically to make the operation more cost effective.

FORMATION OF POWDER FROM HARRA FRUITS

- **DRYING :** After separation of hard portion from the seeds, the separated hard cover or pulp are kept for further drying for 4 - 5 days. Drying area must be free from hazardous substances or any other thing which may impact the quality of fruits.
- **GRINDING:** Grinding of pulp is mainly done with the help of grinding machine and it should be smoothly grind so that texture of powder will be uniform and of good quality.
- **SIEVING :** The powder which we obtained from the grinding process must be sieved with the help of proper size of sieve so that size of powder should be uniform. The process of sieving also helps in avoiding the unwanted large particles from the final products.

FORMATION OF POWDER FROM HARRA FRUITS

- **PACKAGING :** After sieving, the powder is either used for manufacturing the products tripahala or selling the whole powder in market thus packaging is done with the help of packaging machine.

EQUIPMENTS FOR PROCESSING

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

EQUIPMENTS FOR PROCESSING

- **SIEVE :** It used for sieving powder so that only fine powder can be utilized for manufacturing purpose. Without sieving coarse powder will be mixed up.

EQUIPMENTS FOR PROCESSING

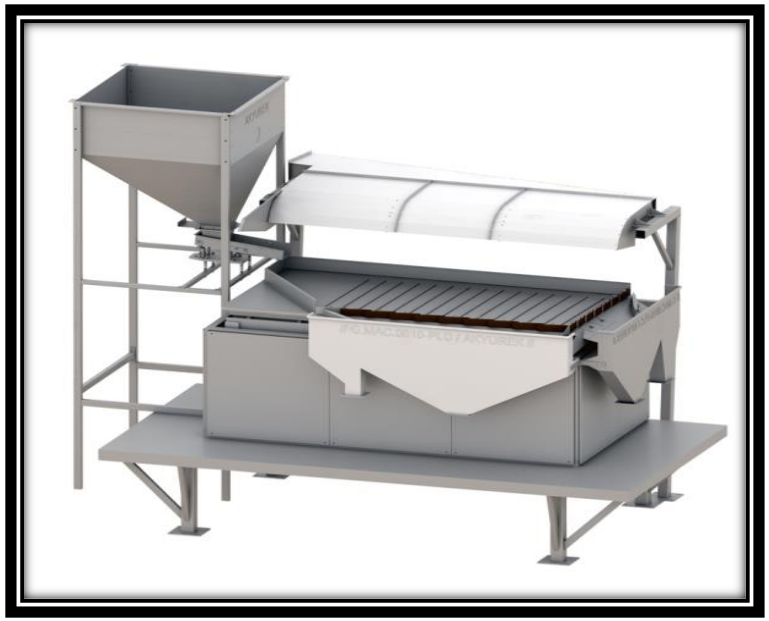
- **FILTER PRESS:** A filter press is a batch operation, fixed volume machine that separates liquids and solids using pressure filtration. The extracted oil has some impurities. These oils are sent into the filter press for further filtration.

EQUIPMENTS FOR PROCESSING

- **CLARIFICATION MACHINE:** Clarification of oil is done to remove non oily solids dirt by passing oil through hot water at 95ºC. Oil and dirt separated from each other where dirt settled down at the lower part while clear oil presents at upper part.

EQUIPMENTS FOR PROCESSING

- **GRAVITY SEPARATOR :** Gravity separator machine may be used to separate any type of dry bulk particles that are similar in size and shape but differs in weight. Gravity separator are suitable for processing of the seeds of corn, Wheat, rice, soybean, sorghum, various vegetables and other agricultural and sideline products.



EQUIPMENT FOR POCESSING

- **OTHER MATERIAL AND HYGIENE EQUIPMENT :** They are simply used to hold and transfer the given material efficiently.

- **POWER DISTRIBUTION EQUIPMENTS:** They are used to safely receive and distribute power.

National Institute of Food Technology and Entrepreneurship and Management

Ministry of Food Processing Industries

Plot No. 97, Sector-56, HSIIDC, Industrial Estate, Kundli, Sonipat, Haryana-131028

Website: http:www.niftem.ac.in

Email: pmfmecell@niftem.ac.in

Call: 0130-2281089