REPUBLIC OF LEBANON
MINISTRY OF ECONOMY & TRADE

GMP GUIDE FOR HALAWA AND TAHINA PRODUCTION 2015

QUALEB
برنامج الجودة
QUALITY PROGRAMME

Programme Funded by the European Union

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CONTENTS

PREFACE

The Quality unit at the Ministry of Economy and Trade implementing the Quality Programme (QUALEB), hosted at the Ministry of Economy and Trade in Lebanon and funded by the European Union, started in October 2004 where two phases were successfully implemented to develop the foundations of national quality infrastructure.

QUALEB phase III has been launched in September 2012 to ensure sustainability and continuity of the programmes' first two phases results and is being delivered through two tools: Technical Assistance and Twinning projects, under the guidance of HE. Dr Alain Hakim, Minister of Economy and Trade and in collaboration with the Delegation of the EU to Lebanon.

The objective of both projects is to ensure the safety of the Lebanese products and increase its competitiveness on international markets through better compliance to national and international standards.

This guidelines has been prepared by the experts of the quality programme in consultation with the Syndicate of Food Industries (SLFI) in Lebanon, as part of QUALEB dissemination activities aimed to enhance food safety knowledge targeting Tahina and Halawa producers.

Sesame seed products Tahina and Halawa are major food products in the Middle East. The Lebanese Tahina

and Halawa industries are expanding their production and are exporting products on a worldwide basis. This sector has been passing through some economic losses since 2001 due to some rejected products that are contaminated with Salmonella.

The conventional approach to ensure food quality and safety, which depends on inspection and testing of the end products, has proved to be inadequate in controlling food-borne disease outbreaks. This may be particularly so in case of traditional foods, because of their diversity and the great number of personnel involved in its production.

This guideline discusses the unique characteristics of Tahina & Halawa, identifies food safety concerns and addresses an approach based on EU best practices and Good Manufacturing Practices as well as HACCP System which is based on training, developing systems for food hygiene, safety, and monitoring to ensure food safety.

Finally, this guideline provides producers experience based information that can be translated, integrated and implemented within the Tahina and Halawa production processes. We hope that the producers benefit from this Guide in producing more safe products for consumers and in preserving their markets and penetrating new ones.

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1- INTRODUCTION

Tahina and Halawa are two major products consumed heavily in Lebanon but also exported abroad all over the world to the Lebanese and Arab diaspora .Those products are produced mainly from one of the oldest oil crops in the world, sesame seed. They constitute an important part of the Lebanese food specialties even though they are also produced all along the Levant area until Turkey and Greece. The most solicited source for sesame in Lebanon is Sudan, in addition to other countries such as Ethiopia, Nigeria, India and China.

Tahina and Halawa are shelf stable self-preserving products because of the very low moisture content in their composition and therefore the final product practically does not need to undergo any severe treatment for its preservation. Having said this, seed crops such as sesame can be exposed during their growth, drying and storage to a wide range of bacteria from many sources including soil, manure, irrigation water, wild birds and animals. The manufacture of Tahina and Halawa must be performed in hygienic manner in order to assure that they are not contaminated from external sources.

One of the main safety issues facing Tahina and Halawa as a consequence is contamination with Salmonella. Evidence of contamination in Lebanese Tahina obtained

from the Ministry of economy and trade, has shown that such contamination has been detected in Lebanon and also has been reported worldwide in countries such as USA, Sweden, Australia, New Zealand and Canada. Salmonella contamination has also been detected in Tahina from other origins, making Salmonella contamination one of the major challenge of Tahina and consequently Halawa production.

The reason it is a challenge is the ironic fact that the very characteristic of Tahina that makes it self-preserving is also the cause that makes some strains of Salmonella contamination very difficult to remove. Hence the most efficient way to obtain a clean Tahina is through the application of good manufacturing practices and good sanitation practices that will prevent any serious hazard to reach or remain in the Tahina and as a result in Halawa.

2- SCOPE

The document is intended to all food processors which are already producers or are planning to produce Tahina and Halawa according to HACCP based GMP. It has been established in order to provide Good manufacturing practice guidance for the production of Tahina from raw sesame seed and for the production of Halawa from Tahina and sugar.

Tahina is the thick liquid product produced from the peeling, roasting and grinding of sesame seeds; and

Halawa can be defined as the sweet solid mass produced from the mixing of Tahina with cooked and aerated sugar

The guide is based on the Codex Alimentarius principles of food hygiene and addresses all practices and safety measures starting from the design of the Factory building until delivery to the market.

The end of the document includes a hazard analysis table showing potential hazards and their preventive controls under GMP. It addresses the issue of the heat treatment of the finished product at the end of the process adopted by several factories in Lebanon to reduce the contamination risks. In addition some example SOP s have been included in the Annexes to provide a guide for companies on their preparation.

3- RELEVANT DEFINITIONS

Backflow: is defined as the flow of water or other liquids, mixtures, or substances into a potable water system from any source, other than the intended source

Cleaning: The removal of soil, food residue, dirt, grease or other objectionable matter.

Contaminant: any biological or chemical agent, foreign matter, or other substances not intentionally added to food which may compromise food safety or suitability.

Cross contamination: The passage of contaminants from a contaminated source (raw food, surface personnel, pests…etc.) to another food or any other surface supposed to be clean.

Disinfection: The reduction, by means of chemical agents and/or physical methods, of the number of micro-organisms in the environment, to a level that does not compromise food safety or suitability.

Flow diagram: A systematic representation of the sequence of steps or operations used in the production or manufacture of a particular food item.

Hazard: a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect.

Hazard analysis: The process of collecting and evaluating information on hazards and conditions leading to their presence to decide which are significant for food safety and therefore should be addressed in the HACCP plan.

Maximum Residue Limit (MRLs): are the upper legal levels of a concentration for pesticide residues in or on food or feed based on good agricultural practices and to ensure the lowest possible consumer exposure.

Preventive measure: means physical, chemical, or other factors that can be used to control an identified food safety hazard.

Standard operating procedures (SOPs): are the detailed written instructions that specify how a test or administrative procedure is to be performed, or how a piece of equipment is operated, maintained and calibrated. SOPs describe the "standard" approved procedures that are routinely carried out in a GMP facility.

4- OBJECTIVES

Producing Tahina and Halawa in compliance with international standards of hygiene require that all aspects of the manufacturing process be addressed and the relevant parameters be identified.

5- BUILDING LOCATION AND DESIGN

Tahina and Halawa premises shall be designed constructed and maintained to control the risk of product contamination

- The building and surrounding area should be such as can be kept reasonably free of objectionable odors, smoke, dust, or other contamination;
- The factory should not be located over or under or very near to animal farms or animal slaughtering areas.
- Factory waste collection and sewage tanks shall be located away from the factory premises. Factory should assure that any shared drainage facilities with other facilities in the area does not affect its environment.
- Factory exterior shall be kept in good repair as to protect against the entrance or harboring of insects or birds or vermin; external drainage pipes and ventilation fans shall be designed to prevent such kind of infestation.
- Factory shall be preferably designed to possess single designated point of entry for raw material reception, for personnel, and for the delivery of finished products; otherwise it shall be compensated by a time schedule.
- Raw material access and product delivery exits shall have a buffering areas or double doors in order to protect warehouse from environment contamination.

5.1- Internal factory layout

The factory building shall be internally designed to comply with the following:

- The factory should be sufficient in size for the purpose intended without crowding of equipment or personnel;

- Areas where raw material such as raw sesame seed and salt are received or stored should be so separated from areas in which final product preparation or packaging is conducted as to avoid possible cross contamination of the finished product.

- Areas and compartments used for storage, manufacture or handling of edible products should be separate and distinct from those that are used for inedible material.

- The food handling area should be completely separated from any part of the premises used as living quarters.

5.2- Building structure

- Floors, walls and ceilings and doors shall be made in a manner to facilitate easy cleaning.

- Wall and ceiling surfaces shall be smooth, free from cracks or damages. Walls shall be light in color consisting of tiles or polymer coatings capable of withstanding hot water and detergents. All junctions must be well sealed. If needed walls should be protected using guard rails in order to reduce the maintenance frequency.

- Warehouse floors shall be covered with coatings or mixtures to avoid dust emissions. Production area floors such as sesame peeling and washing areas, where water and steam might be frequently utilized shall be covered with polymer type coating or tiles that are impervious to moisture and resistant to chemicals and food material. Whenever appropriate, angles should be coved to avoid contamination and facilitate cleaning. Floors should also be sloped for water to drain towards trapped outlets or channels in order to eliminate or reduce the possible retention of water and static water pools.

- Metallic structures or columns shall be made from corrosion free steel or painted with non-corrosive food safe coating.

- Externally opening windows in or close to the production area should be effectively screened to prevent the ingression of flying insects; Preferably there should be no glass in the production area; If glass is present it should be shatterproof or coated with shatterproof film; Wherever possible, glass should be replaced with toughened plastic.

- All doors should be tight fitting and pest proofed. External doors directly opening into the production area should be avoided, where they exist they should be screened or self-closing doors should be of good condition and easy to clean.

5.3 Material and personnel flow

- Production lines and product flow should be designed to have a 'linear flow' from raw material to

finished product and an identification of the low risk and higher risk areas be established.

- A factory plan should be established whereby the physical separation of the low risk areas from high risk areas is reviewed and confirmed. It should also include movement of factory staff from the entrance to their work place.

- Where there is a transfer of product from low risk to high risk activities, care should be taken to ensure practices are in place to minimize the risk of contamination

- Careful consideration should be given to the control of packaging material.

- In the production of Tahina: Raw sesame cleaning and peeling (low risk products) shall be separated from roasting of peeled sesame (high care) and grinding of roasted sesame (high care).

- Staff working in the cleaning and peeling of sesame shall not pass in the areas of roasting and grinding. Measures should be taken before the entrance to those areas to reduce contamination of the area by unclean staff.

- In the production of Halawa: the preparation of Natef (low risk) should be separated from the preparation and filing of Halawa (high care).

- Measures shall be taken prior to the entrance of the Halawa preparation and filling areas to reduce chances of contamination by staff.

5.4- Equipment

- All equipment should be designed and installed in a manner allowing easy access for visual examination and cleaning and where appropriate to be dismantled in order to allow integral parts to be cleaned and disinfected. All food contact surfaces must be smooth, seamless and scratch free; inert to food products.

- Where appropriate, equipment is properly drained and connected directly to drains.

- System must allow good housekeeping practices i.e. 'clean as you go'

- Equipment having direct contact with food shall be accompanied with technical documents or supplier declaration showing compliance with food contact material legislation.

- Whenever possible, parts of equipment which are open to the general environment should be covered.

5.5- Containers for waste disposal

The systematic disposal of waste is critical to remove material that could potentially contaminate safe product.

- Internal waste containers should be clearly identified in specific areas of the factory inside the production and packaging areas; designed to be easily cleaned; do not leak and are designed to be disinfected whenever possible and covered to minimise risk of contamination.

- External waste storage areas should be remote from the main factory buildings, should be kept as clean as possible and included in the site cleaning program; should be protected from pest ingression, removed from the site /or emptied at predetermined frequency.

6- FACILITIES

6.1- Water and steam supply

An adequate supply of potable water with appropriate facilities for its storage, distribution, and temperature control should be available whenever necessary to ensure safety and suitability of food.

- Potable water must come from an approved source, either through a municipal supply or private well; and should be as specified in the latest edition of LIBNOR NL 161/2001.

- In case of the presence of non-potable water system to be used for cleaning purposes or firefighting, it shall be clearly identified and shall not connect with, or allow backflow into, potable water systems.

- Water recirculated for reuse, if available, should be treated and maintained in such a condition that no risk to the safety and suitability of food results from its use. The treatment process should be effectively monitored. Recirculated water can only be used without treatment, provided it doesn't constitute a risk to the safety or suitability of food.

- Only potable water should be used in food handling and processing, except if it is used for steam production, provided that steam is not used in direct contact with the food.

- The water supply must be constructed, properly maintained and tested routinely to ensure safety. In general, wells must be tested at least once per year. Water testing frequency needs to be based on a risk assessment. (Depending on the original contamination of the well and on the risk of contamination).

- In case of non-availability of potable water source, a water treatment system shall be applied. (Sand filtration, chlorination, charcoal filtration, reverse osmosis, ion exchange, or others).

- Hot and cold potable water must be available in all processing areas which can be used for better cleaning and adequate hand washing.

- Sufficient volume and water pressure must be available to dislodge particles sesame or sugar film from surfaces of cooking or roasting equipment. A high-pressure washer is highly recommended.

- Plumbing systems must be installed and maintained according to construction laws (well sized and designed). It shall be identified (by color) for potable water, non-potable water and for steam.

- Adequate cross connections shall be installed between a potable and non-potable source through which backflow can occur; and a regular monitoring of such a system.

- Proper Air breaks shall be used for all plumbing connected to a drain to avoid backflow.

6.2- Drainage and waste disposal

- The factory drainage system shall be designed and constructed to prevent cross-connection between the effluent of human wastes and any other wastes in the establishment.

- No drainage pipes pass directly over or through production areas, unless they are controlled to prevent cross contamination.

- Drainage systems inside the production areas for sesame processing and halawa manufacture shall be shallow and sloped towards the main water trap. All Drainage and sewage systems should be equipped with appropriate traps and vents.

- Facilities are provided for the storage of waste and inedible material prior to their removal from the establishment. These facilities are designed to prevent cross contamination.

- Waste from production and storage areas should be removed to designated waste storage areas at a predetermined frequency; it should not be accumulated in food handling areas and the adjoining environment except so far as is unavoidable for the proper function of the food business.

6.3- Cleaning

- A separate facility should be provided for cleaning and sanitizing of equipment used for inedible material.

- Potable water should be provided at temperatures appropriate for the cleaning chemicals used.

- Cleaning equipment is adequately separated from food storage, processing and packaging areas to prevent contamination.

6.4- Personal Hygiene facilities

- Designate adequate and cleaned dressing areas or clothes/shoes storing and changing areas for workers.

- The provision of an adequate number of hand washing facilities with running water at the suitable temperature; located at the entrances of process areas and strategic locations other than washrooms such as : before entering the sesame processing area; the Tahina filling area; the sesame roasting area; the Halawa preparation and filling area.

- Washrooms also should have hand washing facilities with a sufficient number of maintained sinks that are properly trapped to drains. Hand washing facilities are adequately maintained and have hot and cold running potable water, soap, sanitary hand-drying supplies or devices, and, where required, a cleanable closed waste receptacle as well as self-closing doors. Washroom fixtures, such as water control valves, should be preferably of a type designed to protect against recontamination of clean, sanitized hands.

- Post easily understood signs directing employees to wash and, if appropriate, sanitize their hands before they begin work, before returning to work from a break and any time their hands may have been contaminated .

- Washrooms, toilets, lunchrooms and change rooms and toilets, are adequately ventilated and maintained (adequate floor drainage); they should be located separate from and do not lead directly into food processing areas.

- Toilet facilities shall be adequate and readily accessible; shall be kept clean and in good repair. Basins shall be sanitized at least twice per shift; doors self-closing.

6.5- Temperature, air quality and ventilation.

Tahina production can take place under ambient temperature conditions provided adequate air ventilation takes place in various areas:

- The dry sesame pre-cleaning areas shall be ventilated to remove dust transmitted from the cleaning operation which can cross contaminate other areas and personnel.

- The roasting area shall be ventilated to remove excess steam. Good ventilation is important to prevent condensed water dripping into the dry product and mold growth in overhead structures - which may result in foreign debris falling into the food; as well as raise the working temperature of the area to unacceptable levels especially during summer.

- The roasted sesame grinding area should be well ventilated in a manner to assure a clean air environment free from fine dust particles; especially when grinding stones are being utilized.

- Tahina packaging area should be ventilated with filtered clean air in order to reduce risks of contamination during the filling of Tahina into retail/bulk recipients.

Halawa production can take place under ambient temperature conditions provided adequate ventilation takes place; it is recommended that the Halawa filling and closing areas to be air conditioned in summer when temperatures in the room might exceed 30 degrees C.

- Natef production area, especially when traditional open beater system is utilized, requires removal of excess steam in the environment in order to reduce chances of contamination.

- Halawa preparation and filling area shall be supplied with filtered clean air free from fine dusts or particles that could contaminate product during preparation and while filling. (ISO 14644-1 1999 can be used as a standard.)

6.6- Lighting

- Premises should be well lit, especially in the material storage areas, inspection areas, and areas that are not easily accessible or are difficult to clean.

- Light bulbs and fixtures suspended over food in any step of preparation should be of the safety type or otherwise protected to prevent food contamination in the case of breakage.

Codex Recommended standards for lighting:

- 550 lux (50 foot candles) at inspection points

- 220 lux (20 foot candles) in work rooms
- 110 lux (10 foot candles) in other areas.

6.7- Storage

- Incoming material should be handled and stored in conditions that prevent damage and/or contamination. (Clean warehouse, on pallets, away from walls, adequately ventilated, adequate pest management).

- Incoming material storage should always be separated from production premises.

- Non-food chemicals are stored in designated areas such that no possibility exists for cross-contamination of food or food contact surfaces.

- Finished product warehouse shall be separate from primary material storage and adequately ventilated.

7- PROCESS CONTROL

The objective is to produce Tahina and Halawa which is safe and suitable for human consumption, by controlling process measures at all stages in the operation. Control procedures must be defined and described throughout all the food chain.

7.1- Process flow charts

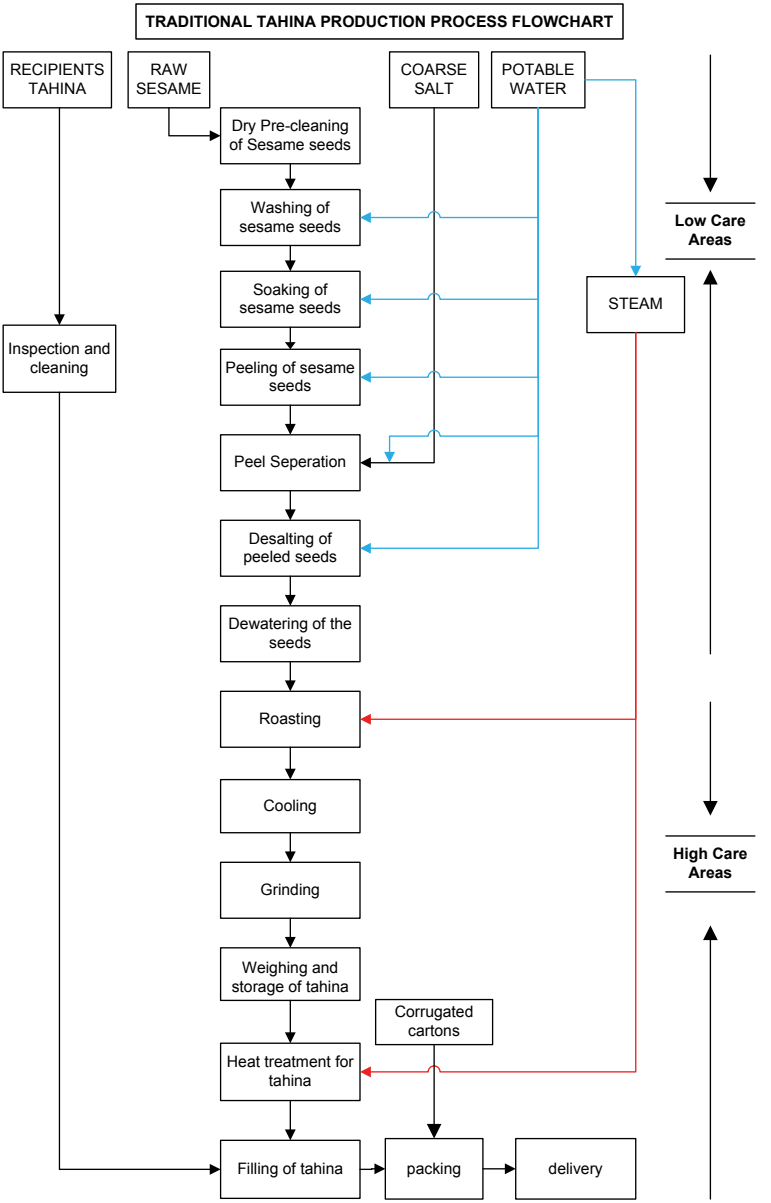
Hereafter are described the process flow charts for:

1- Tahina as produced traditionally which still covers the majority of producers in Lebanon

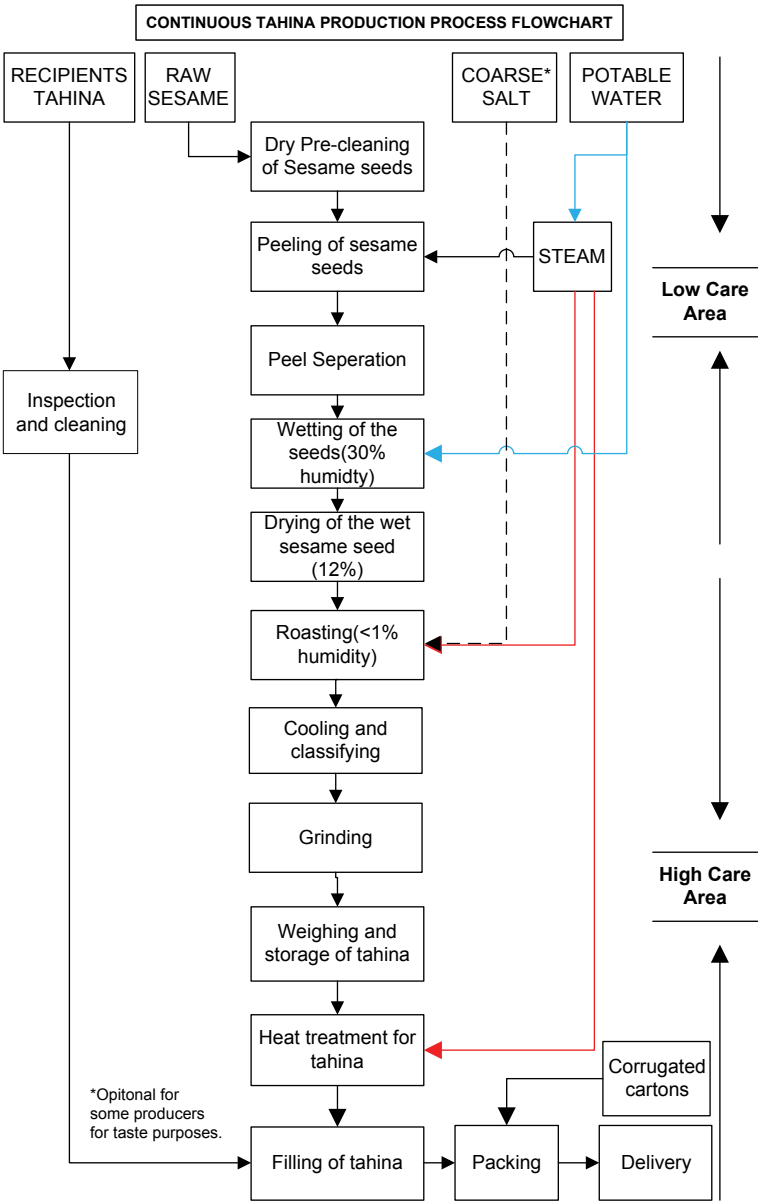
2- Tahina continuous (automated) production line.

3- Halawa traditional process.

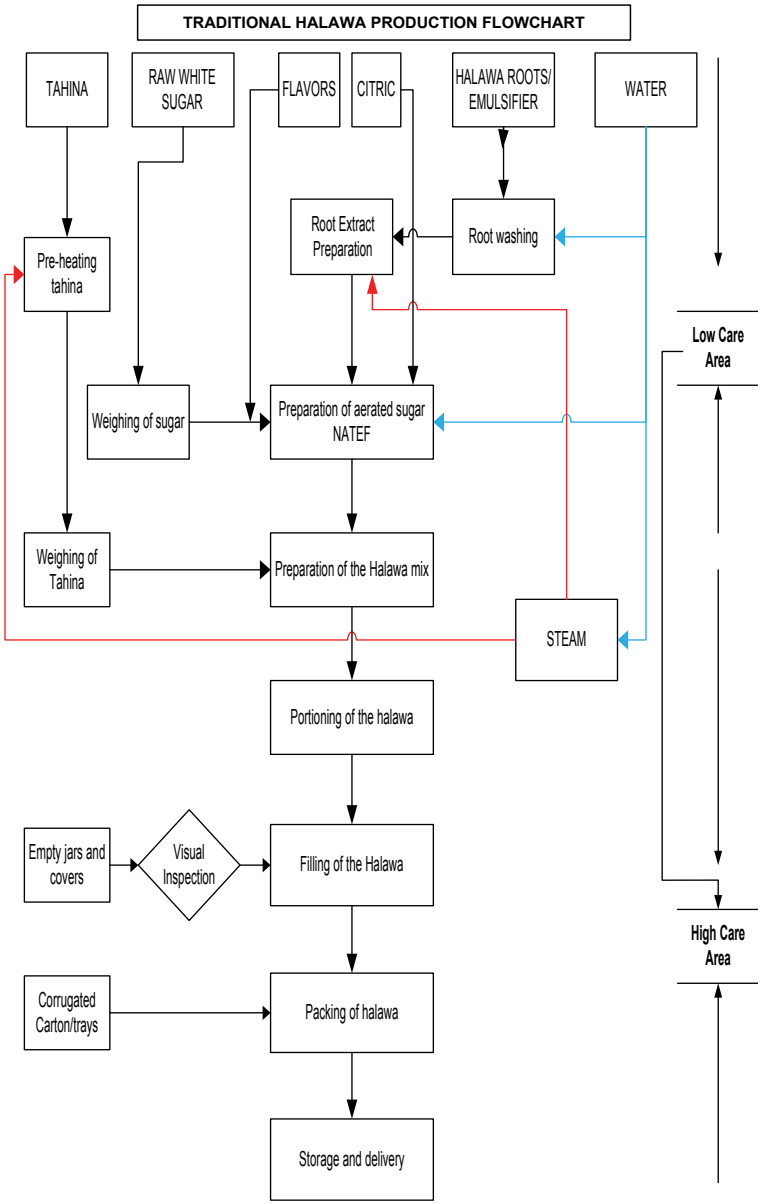
7.1.1- FLOW CHART TAHINA TRADITIONAL BATCH PROCESS



7.1.2- FLOW CHART TAHINA CONTINIOUS PROCESS



7.1.3- FLOW CHART HALAWA TRADITIONAL



7.2- Microbiological, physical and chemical contamination

Production processes for Tahina should be established and implemented in a manner to prevent and control all potential hazards emanating from a microbiological source (B); a physical source (P) and a chemical source (C). A hazard analysis table located at the end of this document has been prepared for Tahina and Halawa based on the flow charts described above.

7.3- Reception and storage of incoming Material

- All incoming raw and packaging material shall be inspected upon reception for quality compliance with required specifications either through sensory analysis or by laboratory testing or through the provision of eligible supplier certificate of analysis or supplier audits.

Material relevant to the production of Tahina and Halawa are: Sesame seed, Sugar, Salt, Natural Halawa roots, chemical emulsifiers and essential oils.

- Documents identifying raw material specifications should be held by the establishment. Those specifications relating to Physical, chemical and microbiological parameters, such as percent of foreign matters, percent moisture, color, size, microbiological criteria, toxins, purity, packaging and hygienic parameters.

- Documents identifying packaging material specifications should be held by the establishment. Those specifications relating to hygienic parameters

and approved food contact material. Packaging material relevant to the packaging of Tahina and Halawa production are plastic (PE, PP, PET) jars/boxes with their cover, printed flexible films, plastic or metallic buckets, glass jars.

- All incoming non-food chemical material such as detergents, disinfectants, pesticides shall be stored in closed areas, separate from food ingredients or essential oils and accessible only by authorized personnel.

7.4- Storage and Delivery of semi-Finished product

- All Tahina produced after the sesame grinding shall be directly stored in closed, clean, dry and inert containers or tanks (Stainless steel is recommended) before packing.

- Bulk Tahina is stored under adequate temperature conditions preferably< 35 degrees C.

- Tahina is regularly agitated to avoid sedimentation.

- Tahina shall be discharged from the tanks through clean valves and pipes to the Tahina packing station or for Halawa production without any contact with personnel or contaminated accessories.

7.5- Storage and delivery of finished product

- Finished products are stored and handled under conditions that prevent their deterioration.(clean secondary packaging, clean warehouse, adequate ventilation)

- Stacking of the finished products shall be on pallets in a manner that protect them from contamination and from over stacking. Products shall be clearly identified by name, date of production and a lot number.

- Samples from each lot are taken for sensory, chemical and microbiological laboratory testing.

- A procedure for finished products shall be established to assure it is not released for external commercialization without lot inspection by an authorized and qualified person.

- Daily records of stock testing and stock rotation shall be kept.

- Returned, defective or suspected goods are controlled, clearly identified, and isolated in a designated area until they can be disposed appropriately.

7.6- Quality of the Water as an ingredient

- All water utilized in the processing of sesame seed must be of potable quality water, unless it has been treated for a specific intended use. (Highly chlorinated water, de-ionized water,).

- Water used in the process (soaking, cleaning, desalting, wetting of the sesame) shall be tested on a daily basis to assure it complies with potable water conditions. The type of tests shall depend on the level of treatment it undergoes and on the original source of the water. Microbiological tests might not be needed on a daily basis but should be performed on a regular basis to verify the performance of the treatment.

- All personnel handling water for process shall comply with sanitation and hygiene standard of the factory.

- Procedure for the maintaining clean potable water in the factory shall be established.

- Records on the sanitary status of the water shall be kept.

7.7- Production management and hygienic parameters

Production management procedures shall insure that Tahina and Halawa are produced in respect to required raw material and finished product specifications including food safety requirements.

- All staff working in the production of Tahina and Halawa shall receive clear tasks and responsibilities, and shall be sufficiently qualified and trained on the process control and especially on the corresponding food safety parameters.

- All task descriptions should be documented and well understood by the persons in charge. Evidence of the qualifications shall be kept (Academic Qualifications, experience, training, history or other).

- Control of the operation should be done in respect to parameters related to the processing such as quality of the peeling, density of the salt solution, time and temperature of roasting, moisture content of the Tahina, viscosity after grinding, color of the Tahina; time

and temperature for processes relying on heat treatment of the final product. For Halawa: Density of the Natef, weight of the product, hygiene of the workers, Records shall be kept for that purpose.

- Procedures should be in place to prevent contamination of foods by foreign bodies such as glass, metal shards, flaking paints, and unwanted chemicals or fumes.

- All filling hoppers, elevators, open food belt conveying should be protected against overhead contamination. (Example roasters, hoppers of the stone grinders, post grinding sifter belts, Tahina filling conveyors, Halawa mixing, Halawa filling).

- As far as possible wood and wooden containers and pallets should be eliminated from food production areas. It could be replaced by stainless steel or food grade plastic material which do not absorb food residues and are easily washable.

- Production managers/supervisors/foremen shall insure that all operators and workers are aware and follow hygienic procedures related to equipment cleaning, process and personnel sanitation.

- Primary and secondary Packaging of the Tahina and Halawa must be adequate to provide protection of the food products, minimize contamination and prevent damage. The packaging operation shall ensure that all material utilized such as food contact material, type of glue, staples, shall not increase the risk of hazard.

- All staff operating in the packaging section shall be well trained on the adequate handling of the food product during the packaging operation and on the hygienic requirements of the material which can come in contact with the food product. All staff shall comply with the personnel sanitation procedures established.

7.8- Quality assurance and quality control

Monitoring of the application of good manufacturing practices, cleaning, online inspection and final product testing shall be applied whenever relevant in order to verify that the GMP requirements as well as the product specifications as required are being implemented in a satisfactory manner.

- Validated Sampling and testing methods shall be established to inspect raw material, finished product and on line parameters for Tahina and Halawa.

- Tests related to food safety are microbiological tests including total viable count and Salmonella; chemical tests including moisture tests and Aflatoxin tests; physical tests including filth determination.

- Adequate laboratory facilities shall be installed in order to perform all scheduled food safety tests; it includes a microbiological unit. In case of absence of a complete factory laboratory, outsourcing of laboratory services shall be undertaken preferably with laboratories accredited for the microbiology tests and Aflatoxin.

- Inspection plans for personnel sanitation, factory sanitation and equipment sanitation shall be established

to verify the application of the GMP procedures. Inspection procedures shall be established and inspection records kept.

- On line inspection of processes and application of hygienic practices shall be performed and non-conformities reported.

- Quality control and laboratory personnel shall be qualified and trained to perform the tasks at hand. Evidence of qualifications shall be presented.

- Quality records shall be generated and kept.

7.9- Record keeping

All quality records pertaining to food safety shall be kept.

- Forms for the reception and laboratory inspection of raw material, delivery and laboratory inspection of finished product, on line inspection of production processes, process parameters, personnel hygiene, implementation of cleaning schedules, food safety complaints, personnel training or other food safety related issues shall be established.

- Records shall be kept with designated staff for relevant periods at least the time exceeding the shelf life of the Tahina and Halawa or as requested by the local regulations.

7.10- Traceability and Recall

- Documentation associated with the product coding system should be established. For traceability

purposes Tahina and Halawa products should be identified with a production date consisting of a production day, month and year or code that identifies each lot. The product coding system should allow the establishment to trace raw ingredients, batch number, packaging material and finished products.

- Records documenting all complaints related to Tahina and Halawa safety and the actions taken should be filed.

- Recall procedures for notifying affected customers should be established; depending on the type and severity of the hazard the communication (fax, telephone, letter, or other means) shall be selected to be used to trace back effectively and quickly all affected product.

- Within the recall procedures, procedures to withdraw the product from the market as quickly as possible should be established, the amount of recalled product involved in addition to the remaining quantity in the company's possession after distribution should be compared with the total quantity produced.

- Control measures shall be taken to isolate returned products in the establishment warehouse after a recall to avoid a cross contamination issue prior to its destruction.

- Production and distribution records should be maintained in order since it allows the establishment in the event of a recall to locate effectively all products. Recall and production records are kept for a period of time that exceeds the shelf life of the product.

8- MAINTENANCE AND SANITATION

- The Tahina and Halawa factories and the equipment used for its production should be kept in good conditions in order to facilitate all sanitation procedures; function as intended, and prevent contamination of food, e.g. from metal shards, flaking plaster or paint, debris and chemicals.

- Cleaning of premises and equipment should remove food residues and dirt which may be a source of contamination. Disinfection is recommended after cleaning.

8.1- Equipment and tools

- The factory should implement an effective written preventive maintenance program to ensure that equipment that may affect food quality is maintained in proper working order. The preventive maintenance program should be followed and should address as a minimum sesame peeler, sesame roasters, sesame grinding stones, sesame grinding machine, Tahina filler, plastic jar sealer, Halawa box sealer, and any other equipment or tool affecting the food safety.

- Equipment should be maintained to ensure the absence of any physical or chemical hazard potentials, e.g. flaking paint, rust and excessive lubrication.

- All surfaces including their joining must be smooth, and must have neither ridges nor crevices which could harbor organic material; Lubricants used for food manufacture should only use food grade lubricants.

- Parts of the equipment where product is open to the atmosphere should be covered to prevent foreign matter falling into the product area.

- Machinery must be designed and constructed as to prevent any liquids, organic matter or living creature (including insects), entering or accumulating in areas that cannot be cleaned (e.g. for machinery not mounted on feet or casters, by placing a seal between the machinery and its base, by the use of sealed units, etc.);

- All equipment must be designed to withstand alkaline washing solutions and hosing.

- Measuring and monitoring devices that affect food safety such as thermometers, weighing scales, pH meters, humidity meters or any others specific tools must be calibrated (evidence of conformity) to ensure that readings are precise and consistent. Records of calibration process shall be kept. SOP for the calibration of various tools should be established.

- Cleaning chemicals should be handled and used carefully and in accordance with manufacturers' instructions.

8.1.1- Special requirements for some Tahina and Halawa equipment:

- Sesame peeler:

- All products in contact with food shall be in food grade stainless steel. (Type 304 or 316).

- All surfaces must be safely accessible for cleaning and for visual examination as manual cleaning is carried out.

- Sesame roaster :

Prevailing Batch roasters:

- Material in contact with the food shall be made of inert material; non-corrosive; preferably stainless steel.

- Gears, couplings and motors responsible for reducing the speed of the scrapers as well as creating the pendulum movement, shall be so designed and constructed that no ancillary substances (e.g. Lubricants, etc.) can come into contact with sesame seeds inducing chemical contamination.

- Roaster shall be designed in a manner to facilitate discharge of the roasted sesame without spillage or leakage.

Continuous batch roasters:

- Material in contact with food shall be of non-corrosive inert material.

- Machine should have easy access for cleaning of the roasting components.

- Grinding stones

- Stones shall be made of food inert material

- Gears and couplings shall be designed not to initiate any grease or oil dripping in the food contact areas.

- Tahina receiving troughs located around the stones and feeding it into the bins shall be made from stainless steel.

- Part of the stones where Tahina flows shall be covered with stainless steel.

- Tahina storage bins

- Shall be manufactured from stainless steel or other food inert material.

- Shall be equipped with a sanitary discharge valve that does not allow stagnation.

- Shall be covered.

- shall possess a fine sifter at the feeding entrance to prevent any physical contamination to enter into the bin.

- Tahina filling machine

- All Tahina contact parts shall be made from stainless steel

- Shall be designed to allow easy access to cleaning with alkaline detergents.

- "NATEF" preparation machine

- Product contact material to be smooth without scratches and from stainless steel.

- Machine easy to clean without sharp edges or corners.

- Sanitary discharge valve to avoid product or water stagnation.

- Halawa preparation tank

- Product contact material to be made from food grade stainless steel.

- Malaxer to be made of stainless steel and should be accessed/removable from all sides for cleaning.

- Electric motor and gear not to be hanging over the food product.

8.1.2- Cleaning procedures (SSOP) and Programs.

- Tahina and Halawa producers should have a written cleaning program related to the areas and equipment to be cleaned; the frequency and the persons responsible for cleaning. (What, when and who)

Areas to be cleaned on a daily basis are: Raw material warehouse, production area, packaging area, laboratory, restrooms rooms.

Area	Frequency	Type of cleaning	Person in charge	Verification
Raw material warehouse	daily	Dry cleaning	Cleaning team	Daily log
Tahina/Halawa Production areas	daily	Wet cleaning and disinfection	Cleaning team	Daily log
Packaging area	daily	Dry cleaning	Cleaning team	Daily log
Laboratory	daily	Wet cleaning & disinfection	Cleaning team	Daily log
Restrooms	Twice per shift	Wet cleaning & disinfection	Cleaning team	Daily log

Equipment cleaning schedule: example Tahina production

Equipment	Frequency	Type of cleaning	Person in charge	Verification
Soaking tanks	daily	COP; Wet cleaning; detergent	Cleaning team	Daily log
Sesame peeler	daily	Wet cleaning; detergent	Cleaning team	Daily log
Sesame dryer	daily	Scrubbing; dry cleaning	Cleaning team	Daily log
Sesame roasters	Every 20 hrs.	Wet clean with scrubbing/ sanitizing	Person in charge of roasting	Daily log
Sesame sifters	According to work intensity	Dry cleaning with scrubbing/ sanitizing	Person in charge of grinding	Log each time it take place
Sesame stone grinders	Every 3 weeks or whenever it looks necessary depending on the intensity of work	Dry cleaning; scrubbing; burning; scrubbing; sanitizing	Person in charge of grinding.	Monthly Maintenance schedule

• Cleaning chemicals should be handled and used carefully and in accordance with manufacturers' instructions and stored, where necessary, separated from food, in clearly identified containers to avoid the risk of contaminating food.

• Sanitation standard operation procedures or SSOP on cleaning of premises should be established:

- Wet Cleaning of walls, floors, ceiling and drainage areas.

- Wet cleaning of laboratory.

- Dry Cleaning of warehouses for raw material and finished products.

• Sanitation standard operation procedures or SSOP on cleaning of equipment:

- Cleaning of soaking tanks and sesame peeler.
- Cleaning of sesame dryers.
- Cleaning of sesame roasters.
- Cleaning of sesame sifters.
- Cleaning of sesame grinders.(Annex 3)
- Cleaning of sesame storage Tanks.
- Cleaning of Tahina filling line.

8.2- Pest Management

Good hygiene practices should be employed to avoid creating an environment favorable to pests.

• Factory Building should be kept in good repair and condition to prevent pest access and to eliminate potential breeding sites Holes, and drains should be kept sealed.

• Wire mesh screens, should be installed on open windows, doors and ventilators.

• Areas both inside and outside food premises should be kept clean. Where appropriate, refuse should be stored in covered, pest-proof containers. Surrounding areas should be regularly examined for evidence of infestation.

- Pest infestations should be treated with chemical, physical or biological agents immediately and without adversely affecting food safety or suitability; label and store all pesticides and pesticide equipment separately from oils and products used in food processing.

- Establish procedures or obtain from suppliers documentation for chemical use to avoid over usage or misapplication. Develop a training program and identify employees with an authorization to apply chemicals. (Annex 4 example of an SOP)

8.3- Waste Management

- Construct and maintain waste receptacles in ways that protect against food contamination. (Recipients to be covered, no leakage of liquids, designated areas).

- Waste must not be allowed to accumulate in food handling, food storage, and other working areas and the adjoining environment except so far as is unavoidable for the proper functioning of the business

- Waste stores must be kept appropriately clean and should be quickly disposed of in order to minimize odor, and potential attraction of flies and other pests.

- Waste water shall be disposed of in municipal sewers or collected in septic tanks far from factory premises after the removal of the solid wastes.

8.4- Personnel Hygiene

Appropriate training on personal hygiene and hygienic handling of food is provided at the beginning of

employment and is reinforced and updated at appropriate intervals.

- All Personnel should always wash their hands when personal cleanliness may affect food safety. For example at the reception of packaging material for Tahina and Halawa; at the beginning of any food activity, immediately after using a toilet, whenever they need to deliver food samples for testing, each time they move from low risk area to a high risk area. (Example: if moving from sesame washing and peeling area to the sesame roasting area, or when moving from Natef preparation to Halawa filling area). Note: Hand sanitizing does not replace hand washing. An SOP should be prepared for this purpose: see Annex 2.

- It is recommended that all working personnel working in the high care areas of the factory to sanitize their hands after washing them and wear clean shoes prior to entering the area.

- Protective clean clothing and hair covering should be worn in almost all areas of the Tahina and Halawa factory. It is advisable that workers operating in low care areas to wear different colors than those operating in a high care areas to avoid cross contamination due to personnel.

- Jewelry, watches, pins or other personal items should not be worn or carried into food handling areas.

- Tobacco, gum and food are not permitted in food handling areas.

- Visitors must adhere to the same personnel hygiene rules and notices are posted at the entrance of the food preparation area.

- Employees who exhibit infected wounds, skin infections, sores or discharges from the eye and nose are prohibited to work in food handling area unless the injury is completely protected by a secure waterproof covering

- Employees who suffer from diarrhea, communicable disease (hepatitis or jaundice) or known to be a carrier of a disease likely to be transmitted through food are not permitted to work in food handling area.

- Medical records for employees should always be kept and regularly checked.

9- TRANSPORTATION

Food must be adequately protected during transport; while transportation tools shall be adequate for the products they carry.

- Tahina obtained from the grinders shall be transported in corrosion free washable inert metal containers /bins or food grade plastic containers. Bins shall be designed to have a smooth surface and to minimize difficult to clean sharp corners as well as utilize non-drip valves.

- Finished product shall be transported in clean trucks.

- Effective cleaning and, where necessary, disinfection of the containers should take place between loads in designated areas near the receiving yard. Containers used for transporting food should always be kept in an appropriate state of cleanliness, repair and condition.

- Inspect bins for damages on a regular basis and repair or discard damaged containers and repair immediately those damages that might induce contamination.

10- PRODUCT INFORMATION AND CONSUMER AWARENESS

- Lot identification is essential in product recall and also helps effective stock rotation. Each container of food should be permanently marked to identify the producer and the lot. Codex General Standard for the Labeling of Prepackaged Foods (CODEX STAN 1-1985, Rev. 2010) applies.

- Tahina and Halawa products should be labeled with clear instructions to enable the next person in the food chain to handle, display, store and use the product safely. The fact that Sesame seed is an allergen shall be clearly indicated on both Tahina and Halawa labels. Ingredients shall also be clearly mentioned especially if additives or coloring agents such as Titanium dioxide are being used. Codex General Standard for the Labeling of Prepackaged Foods (CODEX STAN 1-1985, Rev. (1991)) applies.

11- TRAINING

- All personnel handling raw material and finished product should be aware of their role and responsibility in protecting food from contamination or deterioration.
- Personnel handling strong cleaning chemicals or other potentially hazardous chemicals should be instructed in safe handling techniques.
- Training programs shall take place on topics relate to sesame handling, food contamination, food storage, and the parameters for maintaining the shelf life of Tahina and Halawa.
- Periodic assessments of the effectiveness of training and instruction programs should be made, as well as routine supervision and checks to ensure that procedures are being carried out effectively.
- Training programs should be routinely reviewed and updated where necessary.
- Records for employee training should be maintained.

12- HAZARD ANALYSIS FOR TAHINA

No.	1- Ingredients/process step	2- Identify potential hazard introduced, controlled or enhanced at this step	3- Is hazard significant? (Yes/No)	4- Reason for Column 3	5- Control measures for the hazard
1	Raw Sesame seeds received	Biological B- 1- Presence of Salmonella & other gram negative pathogens. 2- E-Coli. Physical P- 1- Sand & Stones. Chemical C- 1- Pesticide residues. 2- Aflatoxins exceeding 10ppb.	Y Y N	B- 1&2 .Historical data. P- 1- Related to the raw material specifications. C- 1- No record of high level of pesticide or unapproved pesticide residues found in sesame. Codex did not specify MRLs.[1]	B1&B2 - Storage and Raw material reception procedures.(GMP) - Pre-cleaning step. - Roasting step. P1 - Pre-cleaning Step. C1-NA C2- Material reception and testing procedures.(GMP)
2	Sugar received	Biological B- 1. Presence of thermophile spoilage organisms.	N	B- No historical records showing thermophile contamination in sugar.	B- Suppliers' analysis certificate. p- Visual inspection (GMP)
3	Salt received	Physical P- Physical impurities due to low quality salt utilized.	Y	P- History of use of low quality salt stock for the step.	P- - Inspection of incoming raw material. - filtering the brine solution.

1- According to FDA Pesticide monitoring program 2008, 82% of sesame seed samples tested had no pesticide residues and those who had were within the limits and 100% of sesame paste samples (Tahina) had no residues. In the 2011 monitoring program, 100% of samples of sesame seed and Tahina had no pesticide residues.

No.	1- Ingredients/process step	2- Identify potential hazard introduced, controlled or enhanced at this step	3- Is hazard significant? (Yes/No)	4- Reason for Column 3	5- Control measures for the hazard
4	Water utilized	Biological B- 1- Survival of E-coli. 2- Survival of Pseudomonas aerugenosa. 3- Presence of other organisms such as vibrio cholera; hepatitis A, Salmonella. C- 1- High Chlorine residues if the water treatment is based on chlorine. Physical P- 1- Sand .	Y Y Y N	B- 1- Frequent in water that are from wells. 2- frequent in water or municipal water that have been stored for a long period before use. C- Chlorination being widely used as a decontaminant in water. P- Frequently found in turbid waters from wells or stored municipal waters.	B- 1. Appropriate water treatment and testing system. 2. Roasting step in the process. C- 1. Appropriate water treatment system. Charcoal filtration. P- 1-Adequate water filtration system. (UV sterilization immediately before use).
5	Pre-cleaning of sesame seed	Physical P- 1- Stones and sand.	Y	P- Found in almost all types of raw sesame.	Sifting/cleaning of the sesame during the pre-cleaning step.
6	Washing of raw sesame seed	Water (Same as step 4)	Y	Same as step 4	Same as step 4
7	Soaking	water	Y	Same as step 4	Same as step 4
8	Peeling traditional	water	Y	Same as step 4	Same as step 4

8a	Peeling continuous	None			
9	Peel separation	None			
9a	Peel separation continuous system.	None			
10	Desalting of peeled sesame seeds	water	Y	Same as step 4	Same as step 4
11	Dewatering of the desalted peeled sesame seeds	none			
11a	Partial Drying of the peeled sesame seeds	Biological B- - Potential Increase bacterial count due to bacteria carried from the air dryer.	N	- No records showing impact on final product.	Filtration system in the area should assure relatively clean air.(GMP) - Roasting step should eliminate any mild contamination.
12	Roasting of the dried seeds	Biological B- - Survival of Potential Salmonella contamination from raw material. C- - Target moisture content not reached.	Y N	B- 1-Historical data shows that salmonella has been detected in the raw material.	B- - Monitoring of the roasting process. Time vs temperature. C- - Achievement of adequate moisture content levels.

No.	1- Ingredients/process step	2- Identify potential hazard introduced, controlled or enhanced at this step	3- Is hazard significant? (Yes/No)	4- Reason for Column 3	5- Control measures for the hazard
13	Fine cleaning	B- Bacterial contamination from badly maintained or cleaned sifter.	Y	B- Considering the post roasting step and as a result of human improper handling.	- Apply adequate maintenance and cleaning of the sifters, - Apply regular swab tests to verify hygienic level. - Apply GMP sanitation procedures on personnel.
14	Grinding(Stones)	Biological 1- Contamination from badly maintained or cleaned stones. Increase bacterial count. 2- Contamination from pests on idle stones during night time. 3- Contamination from human handling. Physical P- 1- Stone powder emanating from the grinding stones. 2- Remains from pests or insects.	Y Y Y N	B- Historical data shows increase in bacterial count between the roasting operation and the grinding operation. P- No records showing product being rejected neither as a result of physical contamination nor as a result of % ash content.	B- Optional mild heat treatment of Tahina before filling to reduce total counts if exceeding National standards.(LIBNOR 71/2002 rev 2012) - Maintenance and cleaning procedures for the stones.(GMP) - Pest management system. (GMP) - Apply personnel hygiene procedures. P- - Fine wire-mesh to filter Tahina prior to storage and before filling. - Adequate maintenance of stones. - Adequate pest management system. (GMP) - Covering of the stones with clean covers when idle.(GMP)
14a	Grinding (mechanical)	Same as step 14		Same as step 14	Same as step 14

15	Storage of semi-finished Tahina.	B- - Potential contamination from dirty or contaminated bins, or wet bins. (Not well dried after washing). P- -Potential contamination from dirty or dusty bins.	Y	B- - Lack of awareness or negligence .	B- & P - Procedure for the maintenance and cleaning of Tahina storage tanks.
16	Sterilization(optional)	B- Re-contamination of the Tahina post roasting to a level unacceptable by LIBNOR standard 71/2012.	Y	B- Records show that Microbial quality of some Tahina is still below standard requirements.	- Decontamination process to reduce level of microorganisms by a mild heating of the Tahina >70 degrees c.
17	Plastic recipients received.(all sizes)	B- - Cross contamination of the recipient s due to bad handling from supplier till factory stores. C- Recipient produced from material not approved as a food contact material.	Y	Considering that products do not receive any treatment post filling.	B- -Following material reception procedures.(GMP) C- Supplier's certificate That plastic recipients are made from food contact approved polymers. (GMP)

No.	1- Ingredients/process step	2- Identify potential hazard introduced, controlled or enhanced at this step	3- Is hazard significant? (Yes/No)	4- Reason for Column 3	5- Control measures for the hazard
18	Filling/Closing of Tahina	B- - Increase in the total count. - Potential contamination from contaminated packing material. - Salmonella contamination or staphylococcus . - Potential contamination from contact with human handling. P- - Potential contamination from uncovered areas. - Potential contamination from plastic jars and /or plastic covers.	 Y Y Y Y	B- - Bad wrapping and handling of empty plastic recipient. - Unclean human hands. P- - Risk of contamination of exposed food product. - Dirty covers.	B- - Procedure for the Reception of packing material.(GMP) - Hygienic behavior of workers. (GMP) - Covering areas over exposed food. (GMP) - Procedure for the reception of packaging material.
19	Labeling of the recipients	C- Non-declaration of allergen.	N	C- - Tahina being made 100% from sesame.	C- - Adequate labeling.(GMP)
20	Putting closed jars into cartons or trays.	None			
21	Storing at ambient temperatures.	B- - Survival of thermophiles if temperature exceeds 45 degrees for a long time. - Increase of bacterial count if temperature exceeds 35 degrees C for a long period.	Y	- Hot summers in Lebanon and bad storage habits of Tahina.	B- Always store Tahina and moderate temperatures. (GMP)

13- HAZARD ANALYSIS FOR HALAWA

No.	6- Ingredients/process step	7- Identify potential hazard introduced , controlled or enhanced at this step	8- Is hazard significant? (Yes/No)	9- Reason	10- Control measures for the hazard.
1	Tahina received	Biological B- 1- Salmonella & other gram negative bacteria. Physical P- 1- Stones. Chemical C- 1- 1. Pesticide residues.	Y Y N	B- 1.Historical data. P- NA C- 1. Not detected in unacceptable levels sesame.	-Application or GMP on Tahina manufacturing.
2	Sugar received	B- - survival of thermophiles. P- - Impurities.	N Y	B- - Historical data on sugar contamination. P- - Possibility if sugar quality is not class A or B.	B- - High temperature cooking step for sugar(Natef) P- - Raw material reception procedure.
3	Halawa Roots (Soapwort roots) received	B- - Contamination with bacteria some of which might be pathogenic. P- - Sand or soil residues.	N	B- - Natural status. P- - Normal consequence.	B- Heat extraction of the saponin in step 7. P- Washing of the roots prior to extraction. Step 7.
3a	Emulsifier received	none			

No.	6- Ingredients/process step	7- Identify potential hazard introduced , controlled or enhanced at this step	8- Is hazard significant? (Yes/No)	9- Reason	10- Control measures for the hazard.
4	Pistachios or other nuts	B- - Salmonella. C- - Aflatoxins or B1 toxins.	Y	- Historical evidence shows that pistachio /nuts might be contaminated with. B- - Salmonella. C- Aflatoxin B1 toxins.	B- Procedure for receiving raw material.
5	Water	Same as step 4 in Tahina			
6	Plastic recipients	C- - Potential of being unapproved food contact material. P- - Dirt and dust from bad handling.	Y	-Lack of awareness for approved food contact material.	C- - Procedure for receiving packing material. P- - Inspection and possibly sanitizing of plastic recipients.
7	Preparation of Halawa extract	B- - Microbial contamination. P- - Soil or dirt.	N	-Natural presence of microbes or dirt.	- Procedure for the preparation of Halawa extract involves washing and heating.
8	Preparation of Natef	C- - Levels of Halawa root / or emulsifier.	N	Limitations on natural as well as artificial food additives.	- No existing limitations on Halawa root extract (saponin) in Lebanon. - Emulsifiers to follow Codex food additive guidelines.

9	Preparation of the Halawa mix	B- - Contamination from the foreman responsible in the activity. C- - Contamination from addition of new ingredients.	Y Y	- Potential cross contamination.	B- Hygienic behavior of workers (GMP) C- Procedure for the reception and testing of raw material.
10	Portioning of the Halawa	B- Contamination from non-hygienic workers.	Y	- Potential cross contamination.	Hygienic behavior of workers (GMP)
11	Filling /Closing	B- - Potential Contamination from operator/workers. - Potential contamination from packaging material. P- - Potential contamination with dirt from packaging material.	Y	- Presence of unclean packaging material.	B-&P- - Procedure for the reception and testing of raw material.
12	Labeling	C- - Non-declaration of allergen.	Y	- Presence of sesame paste.	C- - Adequate labeling.
13	Putting in cartons	None			
14	Storing at ambient temperatures.	None			

ANNEX 1: FORMAT FOR A STANDARD OPERATING PROCEDURE (SOP)

Name of facility _____**page ..... of.....**

SOP Number:	Title	Rev No.
Effective date	Department:	

Purpose: *(Why is this procedure written and performed)*

Scope: (When this procedure needs to be performed and where does it apply)

Responsibility:
(Who performs the procedure, and who is responsible to see it performed correctly)

Materials and equipment: (What is needed to perform the test if any).

Procedure:

(How to perform the procedure ;should be step by step instructions for the operator to follow; possible to include a section on fundamental principles if relevant)

Reporting:

(What next: where the results should be reported and to whom, what if , list other documents related the SOP)

ANNEX 2 : PROCEDURE:
HAND WASHING TECHNIQUES

Contaminated hands can also transmit infectious diseases; therefore thorough hand washing before commencing or returning to work is essential:

Frequency:

- Before starting or returning to work.
- after using the washrooms or bathrooms
- Before wearing gloves
- After eating or drinking or smoking.
- After working with raw sesame.
- After touching hair, nose, mouth.
- After handling garbage or waste.
- After handling any food allergen.
- Every time hands become contaminated.

Procedure:

1. Wet hands with clean water
2. Apply soap (preferably anti-bacterial)
3. Scrub hands and finger nails (for 20 seconds)
4. Rinse off soap thoroughly with clean water
5. Dry hands with single-use towels
6. Discard used towels in trash

Option when applicable:

7. Apply disinfectant whenever applicable.

ANNEX 3: EXAMPLE OF AN SSOP

SSOP NO xxxx.: Cleaning of the traditional Grinding stones.

Purpose: Cleaning and sanitizing of the sesame grinding stones in order to reduce microbial contaminants and keep machine in good working condition.

Frequency:

Every day for routine check-up

once very month for complete breakdown of machine for cleaning inside parts

Responsibility: Operator of the grinding stones; production supervisor; production manager.

Tools and material needed: Strong plastic or metallic brush; scrapers; cloth; squeegee, sanitizing agents and alkaline detergents.

Procedure:

Daily cleaning:

1. Lift the upper stone to allow for internal cleaning.

2. Check if excess sesame remains are blocking grinding channels. And clean lightly with a sanitized brush.

3. Remove any excess sesame particles or dust is blocking the stone entry under the hopper.

4. Scrape any Tahina remaining in the Tahina canal coming out from the stones.

5. Clean any Tahina residues on the exterior of the stones with a clean sanitized scraper.

6. Make sure that the fine sifter at the entry of the Tahina storage bin is regularly cleaned with a sanitized cloth.

7.Make sure that the external structure of the stone(metallic frame, and stainless steel chute) are wiped on a daily basis with a clean and sanitized cloth in order to avoid any food remaining on the machine for a long period.

8. Let the machine air dry.

9. Inspect if machine is now clean.

Periodic (Monthly) cleaning

Based on factory experience and work intensity the stones shall be maintained and cleaned thoroughly on a periodic basis. Recommended every one month.

1. Call maintenance to lock out all electrical sources and remove all access panels.

2. Make sure that the stone hopper is empty and that the stone has been empty to the extent possible without burning it.

2. If it is not possible to remove the stone from the grinding room then isolate the stone area from other stones.

3. Remove the stone hopper and upper stone to the highest position.

4. With the help of a clean and sanitized brush clean thoroughly the inner surfaces of the stones to remove any particulate matter or remaining food residues; this should be done unit the internal stone grinding tooth and product channels are clearly apparent.

5. Mist the surface of the stone with a sanitizing liquid and keep it for a sufficient time until sanitizing action can take place.

6. Let air dry.

7. Mist the internal surfaces of the stones (grinding surface) with pure ethanol and let it burn. This should continue the sainting process and assure a complete drying of the stones.

8. Wipe all dismantled and frame connected parts with detergent to remove any particulates and then dry it well with a cloth and mist with a sanitizing agent.

9. Let it air dry,

8. Inspect machine to make sure all parts are clean.

10. Call maintenance to put machine back together.

Corrective Action:

- If particulate matter is found on any area of the machine upon inspection, repeat clean-up procedure as detailed above for that particular area.
- If machine fails to start after weekly breakdown, call maintenance. Do not attempt to fix machine!

Validation

- Apparent cleanliness and smell of the stones.
- Microbiological swab tests for total count and survival of Salmonella.

Records

Logs showing cleaning schedule and validation documents shall be maintained with production manager.

ANNEX 4 : EXAMPLE ON SOP FOR PEST MANAGEMENT

SOP NO.XXX: Pest management

Purpose: reduce the risk of contamination by rodents and other animals.

Responsibility: production manager, pest control staff.

Pest control system

Establish a pest control program which should include regular and frequent monitoring of affected and treated areas to accurately assess the program's effectiveness.

Pest control procedures

- All procedures should be written and all agrichemicals must be registered for use in food handling establishments.
- Pest control procedures should describe the location of any indoor or outdoor bait stations, glue boards, and insectocutors. Indoor bait traps should be placed every 3 to 4 meters and immediately on each side of doorways – both inside and out. Outside bait traps should be placed every 6 to 9 meters. Document trap or bait station locations with a schematic map.

- Include information on when placed, when bait was replenished, and/or when the trap was last checked. Make sure all stations are numbered and types of trap(s) are described. Records of bait disappearance and catches must be kept for each bait station and trap. The insect control procedures must be described.

- Maintain a pest control log that includes dates of inspection, inspection report, and steps taken to eliminate any problems. Establish frequent monitoring of affected and treated areas to determine the effectiveness of the treatment applied.

- Maintain the grounds in good condition. Grounds in the immediate vicinity of all packing areas should be kept clear of waste, litter, and improperly stored garbage.

- Keep all grasses cut to discourage the breeding, harboring, and feeding of pests, such as rodents and reptiles. Remove any unnecessary articles, including old and inoperative equipment that is no longer used, to eliminate areas that harbor rodents and insects.

- Clean and sanitize daily to remove product or product remnants that attract pests in and around the packing facility and any other packing location where product is handled or stored.

- Maintain adequate surface drainage to reduce breeding places for pests and food contamination by seepage.

• Operate water treatment and disposal systems so that they do not become a source of contamination. If grounds not under your control border the plant, protect your facility by inspection, extermination, or other means to exclude pests, dirt, and filth that may be a source of food contamination.

Monitor and maintain facilities regularly

Regularly inspect all facilities to check for evidence of pest populations or animal contamination. Minimize the availability of food and water to pests. ·

Remove dead or trapped birds, insects, rodents, and other pests promptly to ensure clean and sanitary facilities and to avoid attracting additional pests. Ensure that potential nesting or hiding places for pests have been eliminated. ·

If the plant was fogged with insecticide, clean, sanitize and inspect all equipment afterwards to insure removal of all dead insects.

Follow all applicable label directions, including proper disposal of empty containers.

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REPUBLIC OF LEBANON

MINISTRY OF ECONOMY & TRADE