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Implementation of Prerequisite programmers (PRPS) System during Flour Extraction 72%

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ABSTRACT

Building complex Food Safety systems require a few subsequent steps in the form of prerequisite programs (PRPs); they are part of an effective HACCP Plan and create conditions where hazards are reduced to acceptable levels. Operations such as regular cleaning and sanitation, and even proper hand washing to avoid cross - contamination are all part of a bigger food safety program. Prerequisite programs must be satisfied to establish more complex food safety plans such as the Hazard Analysis Critical Control Point (HACCP)Establishing correct prerequisite programs builds a solid foundation for other food safety plans and shows a firm commitment to protecting public health. These operations can significantly minimize the pressure on implementing food safety plans as the hazards are already addressed in the earlier stages of the production process. Food safety is related to the absence of hazardous substances in food before consumption. Therefore, adequate control across the food chain is necessary to ensure food safety through the joint efforts of all parties. So that there are no hazardous substances at any stage of food production.

1. INTRODUCTION

Wheat is a product of paramount importance to Egypt and wheat policy is a priority for the government **(Faun, 2015).** Since nearly a quarter of Egypt's low-income population depends on wheat bread, the main food item for most Egyptians. Cereals are grown on irrigated fields, yielding relatively stable harvests. About 3.4 million feddans (equivalent to 1.38 million hectares) were planted with wheat in the 2019/2020 cropping year, slightly more than 3.27 million feddans (1.37 million hectares) planted in the previous year. The Ministry of Agriculture forecasts the 2020 wheat production to be at least 9 million tonnes, similar to last year and five-year average **(FAO, 2020).**

Wheat flour is described in the Egyptian Standard (1251-1) as the flour produced by grinding wheat grains that are free of inorganic materials (sand, soil, stone and minerals) and organic materials (residues of animals, plants and insects) of high cleanliness. According to the Egyptian Standard **(ES: 1251-1/2005),** wheat flour should have a good appearance, unique color and be free from foreign taste and odor. At present, wheat flour with an extraction rate of 72% is traded in Egypt as a high-value commodity for bread products.

Food hygiene can only be achieved in the food business with the right tools and knowledge of what causes food borne illnesses that have adverse health effects and how to control them. It is the responsibility of a food safety management and production supervisor to provide the necessary conditions and prerequisites to create a hygienic working and service environment.

A prerequisite program (PRP) in food safety is a system that provides the basic conditions to operate in a safe environment for the production of wholesome food. These programs can be treated as the foundation of every succeeding food safety plan.

The prerequisite program is a part of the HACCP Plan. Prerequisite programs are called as such because they need to be satisfied first before a food business can confirm a HACCP plan. PRPs are preventive maintenance procedures that layout the solid foundation for more complex plans with stringent and specific controls for food safety. Operations such as pest control programs help higher food safety plans control the potential presence of physical and biological contaminations.

Prerequisite programs are composed of basic food handling practices and manufacturing procedures that promote safety and good sanitary condition. These conditions address basic food safety issues without the need for complex monitoring records.

The prerequisite programs have traditionally been based on current Good Manufacturing Practices (cGMP). As the food industry grew, more prerequisite programs have stemmed from this practice.The term prerequisite program is often mistaken for other systems that make up a food safety plan.

Therefore, this study was conducted on the production of wheat flour with 72% extraction in one of the modern mills in the Arab Republic of Egypt in light of the careful application of the Hazard Analysis and Critical Control Points system, the evaluation of the effectiveness of this system in quality and the safety of the final product.

2. MATERIALS AND METHODS

2.1. Materials

This research was carried out through the process of milling and producing fine wheat flour (72% extraction) in West Cairo Mills throughout the year 2020 until 2022. It is classified as a medium-sized factory, and the study was designed with the aim of achieving food quality and safety, as it aims to expand the market company. Thus, the company plans to implement to ensure that products are safe and of high quality, an effective quality system must be in place.

Wheat grains: Russian and Ukrainian wheat grains, whose protein content ranged between 11.5~12.5% and conforms to the Egyptian Standard **E S 1601-1(2010).**

Tap water: Tap water, which had the Egyptian Standard Specifications **ES No.190-1(2007).**

Sodium chloride*:* Sodium chloride (NaCl) was used to conduct rheological tests in accordance with Egyptian Normative Specifications **ES No. 2732-1(2007).**

Packing and Thread*:* Natural polypropylene bags made for foods that are free of chemicals, odors, and insects in accordance with Egyptian Normative Specifications **ES No.2855 (2006),** and thread in accordance with Egyptian Normative Specifications **ES No. 2778 (2021)** were employed.

2.2. Methods

Due to its depth and meticulous investigation, this study fitted a qualitative research approach. The events, interactions between employees, and observable behavior were all documented it revealed the complex interactions of events that are difficult to convey using quantitative approaches. Qualitative research is inquisitive and open-minded, which is ideal for our investigation**. (Patton, 1987).**

2.2.1. Rheological tests for wheat and wheat flour

Determination of wheat and wheat flour gluten and index: Wheat gluten and index were determined in wheat grain according to **AACC (2012).**

2.2.2. Determination of Ash

Ash content in wheat grains and flour was estimated as described in **AOAC (2016), ISO2171:2007 and ICC 104/1(1993).**

1. Place the crucible and lid in the furnace at 550°C overnight to ensure that impurities on the surface of crucible are burned off.
2.Cool the crucible in the desiccator (30 min)
3.Weigh the crucible and lid to three decimal places .
4.Weigh about 5 g sample into the crucible. Heat over low Bunsen flame with lid half covered, when fumes are no longer produced place crucible and lid in furnace.
5. Heat at 550°C overnight. During heating, do not cover the lid. Place the lid after complete heating to prevent loss of fluffy ash. Cool down in the desiccator .
6. Weigh the ash with crucible and lid when the sample turns to gray. If not, return the crucible and lid to the furnace for the further ashing.

$$\text{Ash (\%)} = \frac{\text{Weight of ash}}{\text{weight of sample}} \times 100$$

2.2.3. Fall number assay

Falling number of wheat flour was determined according to **AACC (2012).**

Implementation Prerequisite programmes on food safety **ISO/TS 22002-1:2009**

When selecting and/or establishing PRP(s), the organization shall ensure that applicable statutory, regulatory and mutually agreed customer requirements are identified. The organization should consider:

- The applicable part of the ISO/TS 22002 series.
- Applicable standards, codes of practice and guidelines. Construction and layout of buildings and associated utilities.
- When establishing PRP(s) the organization shall consider.
- Construction layout of buildings and associated utilities.
- Layout of premises, including zoning, workspace and employee facilities.
- Supplies of air, water, energy and other utilities.
- Pest control, waste and sewage disposal and supporting services.
- The suitability of equipment and its accessibility for cleaning and maintenance.

- Supplier approval and assurance processes (e.g. raw materials, ingredients, chemicals and Packaging).
- Reception of incoming materials, storage, dispatch, transportation and handling of products.
- Measures for the prevention of cross contamination.
- Cleaning and disinfecting.
- Personal hygiene.
- Product information/consumer awareness.
- Others, as appropriate.

Documented information shall specify the selection, establishment, applicable monitoring and verification of the PRP(s).ISO22000:2018

3. RESULTS AND DISCUSSION:

Migration analysis of packaging material:

Overall migration test: the overall migration test was carried out in three stages. The first stage is acetic Acid 3% for 10 days at 40°C the second stage is ethanol 10% for 10 days at 40°C and the third stage is distilled water for 10 days at 40°C so that no more than 10 mg/dm² and the results were within the permissible limits According to EN 1186-3/2011.The results are also recorded in Tables No.1&2.

Table (1): Concentration overall migration test

1-Acetic acid 3% for 10days at 40°C		2-ethanol 10% for 10days at 40°C		3-Distilled water for 10days at 40°C	
Test items	Values	Test items	Values	Test items	Values
1st Replicate mg/dm²	1.70	1st Replicate mg/dm²	1	1st Replicate mg/dm²	0.75
2ndReplicate mg/dm²	2.15	2ndReplicate mg/dm²	0.9	2ndReplicate mg/dm²	0.5
3rdReplicate mg/dm²	1.95	3rdReplicate mg/dm²	1.05	3rdReplicate mg/dm²	0.75
Mean mg/dm²	1.93	Mean mg/dm²	1	Mean mg/dm²	0.7
Standard limits		Not more than 10 mg/dm²			

Table (2): Concentration migration of heavy metals by 1- acetic acid 3% for 10days at 40°C

Test items	unit	Values	compliance	Standard limits
Copper	Mg/kg	not detected negative	comply	5≤
Iron	Mg/kg	not detected negative	comply	48≤
Zinc	Mg/kg	not detected negative	comply	5≤
Manganese	Mg/kg	not detected negative	comply	0.6≤
Barium	Mg/kg	not detected negative	comply	1≤

Drinking water analyses: A chemical analysis of the water was carried out, and the results showed that the percentage of heavy metals and the percentage of salts in the water were made according to the Egyptian Food Safety Authority, and the results were identical according to the method described by **APHA (1995)** shown in Table 3.

Table (3): Chemical analysis of water

test	Values	test	Values	test	Values	test	Values

Arsenic (As)	not detected	Odor	Odorless	Iron (Fe)	0.2 mg/L	TDS	95 Mg/L
Cadmium (Cd)	not detected	Sodium	15 Mg/L	Magnesium Hardness	24 mg/L	Total Hardness as $CaCo_3$	120 Mg/l
Chlorine (Cl)	0.07 mg/L	Turbidity	Not turbid	Manganese	not detected		
Color	colorless	Ammonia	0.02 Mg/L	Nitrite	0.006 mg/L		
Cyanide (Cy)	not detected	Calcium Hardness	96 Mg/L	pH	7.2	Zinc	Not detected
Lead (pb)	not detected	Conductivity	156µs/cm	phosphate	0.4 mg/L	-	-
Mercury (Hg)	not detected	Copper	0.1 mg/cm	potassium	0.13 Mg/L	-	-

Rheological tests for wheat and wheat flour

Ash content from the results in Table (4), were as follows for the ash content in wheat and flour has significance for milling. Millers need to know the overall mineral content of the wheat to achieve desired or specified ash levels in flour. Since ash is primarily concentrated in the bran, ash content in flour is an indication of the yield that can be expected during milling. Ash content also indicates milling performance by indirectly revealing the amount of bran contamination in flour. Ash in flour can affect color, imparting a darker color to finished products. The ash content referring to the mineral content was 1.55, 1.60and 1.66, respectively. The highest value of ash content was 1.66 for the post-condition. There are significant differences ($p > 0.05$) in the mean values of ash content at all stages for all samples. These data are consistent with those indicated by **(Narisawa *et al.*, 2019. Silveira *et al.*, 2020)**, who reported that the ash content of wheat ranged between 0.35-1.96 %

For wheat flour*:* Ash contents, which indicate of mineral contents, were 0.50 and 0.47, respectively. The highest value of ash content was 0.50 for after stored, while the lowest was 0.47 for wheat flour 72% extraction. These data are agreement with those indicated by **Mepba *et al.* (2007), Salehifar *et al*. (2012), Bueno *et al*. (2016) and Cappelli *et al*. (2020)** who showed that ash content for wheat flour were ranged from 0.40 to 0.82%.

Estimation Protein content*:* The results in Table (4), were as follows for Protein content is a key specification for wheat and flour purchasers sinceit is related to many processing properties, such as water absorption and gluten strength. Protein content can also be related to finished product attributes, such as texture and appearance. The highest value for protein content was 12.6 for fresh wheat. There were no significant differences ($P < 0.05$) in the mean values of protein content at all stages for all samples. These data are consistent with those reported by **Anjum and walker (2000), Rachon and Szumilo (2009).** Also, **Narisawa *et al.* (2019), Li *et al*. (2020) and Silveira *et al.* (2020)** found that protein contents in wheat ranged between 8.5 to 14.83%.

For wheat flour: The protein content was 12.6% and 12.67%, respectively. The highest value for protein content was 12.67% for wheat flour, and the lowest was 12.6 for wheat flour after storage. These data are consistent with those indicated **(Ragaee *et al.*, 2006. Mepba *et al.*, 2007. Ibrahim, 2011.**

Salehifar *et al.*, 2012 and Bosmans *et al.*, 2013) who reported that the protein content in flour Wheat was ranged from 11.0 to 12.86% protein.

***Estimation falling number content**:* The level of enzyme activity measured by the Falling Number Test affects product quality the results in Table (4) were as follows for the Falling Number content. The falling number the highest value of raw wheat and wheat flour was 410 and 390seconds, respectively. Similar results have been reported **(Bueno *et al*., 2016, Liu *et al*., 2017 and El- Sisy *et al*., 2019).**

***Estimation wet gluten content**:* the results in Table (4) were as follows for the wet gluten, Gluten is responsible for the elasticity and extensibility characteristics of flour dough. Wet gluten reflects protein content and is a common flour specification required by end-users in the food industry. Wet gluten recorded the highest value in wheat flour, which was the third stage, and it was 27.5, while the lowest value for wheat after storage was in silo it was 25.5. On the other hand, the highest value of gluten index was recorded for flour after storing for a period of three months it was 98. These data are agreement with those indicated by **(Ali, 2012. Salehifar *et al.*, 2012. Bueno *et al.*, 2016 and El- Sisy *et al*., 2019).**

Table 4: Basic tests for wheat (mean±SE) (g/100g on wet weight basis).

Components % Samples	Ash	Protein	falling number content	wet gluten
Fresh wheat	1.55	12.6	410	24.5
After cleaning	1.60	12.6	360	25.5
After conditioning	1.66	12.6	390	26.5
wheat moisture before milling	.47	12.6	390	27.5
Moisture of wheat flour after milling	.50	12.67	405	27.6

Implementation Prerequisite programmers on food safetyISO/TS 22002-1:2009:
This Technical Specification specifies detailed requirements to be specifically considered in relation to ISO **22000:2018, 8.2:**

Training program requirements: A training plan has been established in the annual operating plan, as it includes all food safety systems such as Personal Hygiene, Good Manufacturing Practices and 6S, Cleaning and Sanitation, Emergency and Crisis Management, Food Defense, Food Froud , PRP's & HACCP, ISO 22000 - 2018, BRCGS , pest control. To raise awareness and raise the efficiency of the company's employees So that the training program should include all the following documents: annual training plan, employee training course record, procedure (competence - awareness - training), training needs form, training procedure, training program follow-up, trainee evaluation and opinion poll.

***Warehousing Iso-TS22002-1 (2009*)**: Cleaning and temperature and humidity control are provided in storage rooms. Inspection of conditions on a daily basis ensures a dependable environment in which to avoid hazards and generate products of excellent quality. The product is stored at a temperature of 25 degrees Celsius and a humidity of 60%.

Personnel hygiene and employee facilitiesIso-TS22002-1 (2009): All staff in the production, packaging, and storage facilities wear Apron, hand gloves, mask, head covering, and boots. Before they begin their activity, they wash their hands with liquid hand soap. Every employee has a regular physical examination by a qualified medical officer, and any sick or injured person is not permitted to enter or operate in the processing areas.

Pest control Iso-TS22002-1 (2009): The pest control Technical Group, a company specialising in the food industry, was hired to carry out the tasks. They carry out their tasks four times a month, in the presence of the employee in question.

Equipment fit, cleaning and maintenanceIso-TS22002-1 (2009):Product contact surfaces are made of food safe materials. It does not rust or corrode, and it is leak-proof.Preventive and Corrective Maintenance The preventive maintenance system is designed to follow up on corrective maintenance work in places far from production lines so as not to jeopardize product safety or quality.

Waste management and removal Iso-TS22002-1 (2009): Arrangements have been designed for sorting, storing and removing waste. So that waste is not allowed to build up in areas, where food is prepared or stored. To guarantee trademarks are not reused, defaced, or destroyed printed materials, products, or packaging labeled as garbage. Remove and destroy by authorized disposal contractors. Destruction records are kept. Drains and drainage Drains are designed, built, and placed such that there is no risk of contamination of materials or goods, and they have the capacity to handle the predicted flow loads. Therefore, that water does not flow from a dirty area to a clean area during drainage.

Utilities-Air, Water and EnergyIso-TS22002-1 (2009) Filtration and humidity (percentage RH) requirements were considered, and ventilation (natural or mechanical) was provided to remove excess or unwanted dust and odors.

Building and Workspace DesignIso-TS22002-1 (2009): Interior blueprints are created, built, and maintained to support good hygiene and manufacturing practices, material and product design patterns, movement of people, and equipment design to defend against potential sources of contamination.

Interior design, layout and traffic patterns the structure is designed with sufficient space, with a logical flow of materials, products and personnel, and physical separation of raw materials from processed areas. Material transfer hatches are designed to reduce entry of insects and foreign matter. Equipment locations have been created, positioned in such a way as to make good hygiene habits and monitoring easier. Storage and transportation Storage rooms are cleaned, and the temperature and humidity are maintained. Hygrometers and data loggers are used to monitor storage rooms. Daily inspections ensure a consistent environment to avoid risks and produce high quality products. Hygiene, temperature and separation of food and non-food products are assessed and monitored while using appropriate conveying equipment.

Construction and layout of buildingsIso-TS22002-1 (2009): The structures are designed, constructed, and maintained in accordance with the type of the processing operations to be performed, the food safety concerns associated with these operations, and the potential sources of contamination from the plant's surroundings. The structures are well built and offer no danger to the products. The potential sources of pollution from the local environment were taken into account. The efficacy of the safeguards put in place to protect against potential threats of pollutants was reviewed periodically as well as avoiding cross-contamination of final goods with raw ingredients.

Adequate control measures: Process controls are controllable steps in your daily operations that help maintain food safety. Storage conditions, supply of quality materials, and routine maintenance of all equipment. The application of such procedures helps prevent contamination from occurring.

Table (3) shows the risk analysis for Prerequisite Programs (PRP) where the risks are broken down at each step showing the control measures, how to monitor and corrective action. Where each stage of the infrastructure and basic components of (PRPS) was discussed, with the identification of the risk and who is responsible for monitoring Where HACCP prerequisite programs and operational prerequisite programs are both essential for the success of a HACCP plan. The two categories of operations have different functions and benefit a food business differently as well.

4. CONCLUSION

The initial requirements programs are the base on which food safety management systems are built, as food safety management systems are not built without this package of basic programs that should be available first so that the facility can verify the efficiency and effectiveness of these systems.

As discussed, PRPs are not designed to target a particular hazard with unacceptable health risks. They are applied to generally create a safe environment for food production. PRPs, unlike OPRPs, must always be present. The basic food hygiene practices included in PRPs are required by higher food safety plans to work.

Programs may also involve control of food safety in receiving incoming materials, water systems, laboratory checks, and other areas that contribute to the safety of your finished products. While these programs do not require critical limits, they are essential in keeping the environmental conditions safe for the production of food for consumption. Responsible food business operators must be acquainted with all standard operating procedure documents related to their tasks for effective application. This is to help them perform all PRPs correctly all the time.

Results shows the risk analysis for Prerequisite programs (PRP) where the risks are broken down at each step showing the control measures, how to monitor and corrective action.

PRP	Hazards		Control	target	monitoring			Corrective Action
	Hazardous Agent(s)	Origin (s)	measures		Activity	responsibility	Records	
1.Control of Personnel	**Physical** contamination by foreign bodies (jewelry, hair, clothes. ETC)	The personnel and its clothes	- Implementation of hygienic personal practices. Full training on food safety and good hygienic practices. Respect of the zoning plan and the restriction linked to each area (jewelry forbidden in green zone). Temporary exclusion from production site of ill staff members. Enough Washing and disinfection tools are provided.	Absence of foreign bodies due to personnel belongings	GMPS Inspection	Q.C Department	GMPS Inspection records	Retraining Disciplinary action
	Microbiological contamination due to insufficient hygiene (dirty hands, illness (sneezing-coughing-fever), outdoor clothes, ETC	The personnel and its clothes		All staff is aware of hygienic issues and Comply with GMPS.				

2.Pest control	**Physical** and microbiological contamination brought by pests (hair, excrement, body parts, bacteria, molds ETC)	Pests (Insects, rodents, birds ETC)	-Use of pest control devices and chemicals only by fully trained operators. - Use of approved authorized chemicals and devices fitted for food company. - Correct placement of control units. - No toxic baits inside the production area. - Clean and dry work areas.	-Absence of foreign bodies and microbiological contaminations due to pests' presence	GMP Inspection	Q.A head	GMPS Inspection records	Notification of the company which provide service and Frequent assessment of it
	Chemical and physical contamination by pest control devices (baits, traps ,insecticides, spraying ETC.	Misuse or storage of chemicals and poor management of devices used for pest control		No contamination by pests control measures.	GMPS Inspection	Q.A Or production	GMPS Inspection recons	
	Microbiological	Humidity, temperature environment.						
3.**Maintenance of equipment**	**Physical** contamination by loose equipment parts,	Poorly maintained equipment, technician's	-Maintenance by trained and experienced operators. -	Absence of foreign bodies due to poor maintenance.	GMPS Inspection	Q.A head	GMPS Inspection records	Review maintenance plan - Retraining

	forgotten tools, ETC	bad maintaining habits or mistakes	Only food-contact grade materials are used e g. food grad lubricant. - Cleaning and verification after maintenance					
	Microbiological contamination of parts in contact with food during maintenance	Bad habits, mistakes technician's during maintenance or insufficient cleaning		Avoiding microbiological contamination due to maintenance				
	Chemical contamination due to use of inappropriate material for maintenance ,eg use of nonfood contact grade lubricant	Technician's bad maintaining habits or mistakes.		Use the right products and protocols for equipment maintenance				
4.Maintenance of Buildings	**Physical** contamination	Degraded parts of the building (walls, ceiling).	Buildings are designed and kept in good repair following the Good manufacturing practices. -No buildings maintenance at proximity of a production or	Buildings are not a source of foreign bodies	GMPS Inspection	Q.A head	GMPS Inspection records	Maintain buildings Repair Train staff
	Microbiological contamination	Presence of water leak, bad evacuation of wasted water, mishandling etc		Buildings do not constitute ecological niches for pathogenies microorganism.				
	Chemical contamination	Building maintenance		Chemicals used for buildings				

		chemical products (paint, cleaning and repairing products etc.)	during the production.	maintenance are isolated from food production.			
5.Cleaning and Sanitizing	**Microbiological** contamination	Insufficient cleaning and disinfecting, over use of water, insufficient drying, use of inappropriate tools	- Establishment of cleaning procedures. - Establish a clean plan for equipment.	All staff in charge of cleaning has to fit to the cleaning procedures to avoid any microbiological contamination	GMPSInspection (maintenance plan Inspection)	Q.A head	GMPSInspectionrecords	Review Cleaning plan - Retrain
	Chemical contamination by cleaning products	Wrong cleaning method, misuse of cleaning chemicals, use of appropriate or unapproved cleaning products.		Use the right chemicals and methods for cleaning.				
6.Control of Visitors and Security	**Physical** accidental contamination by foreign bodies, (jewelry, hair, clothes ETC	Visitors and their belongings	Before entering the facility, Visitors receive information about Hygiene, confidentiality, safety rules and	- All visitors comply with the rules of the facility and do not represent a safety risk for the production	Sign-in for visitors by security	QA or production department	- Sign-in records	- Review visitor's booklet -Advise staff to report visitors

	Microbiological contamination due to contact with any process-related material	Visitors and their clothes	they must observe these rules during the visit. - Visitors are accompanied permanently. They must follow Zoning plan requirements	or for themselves				
	Deliberate contamination or degradation	Intruders	Security systems, e.g. restricted access by a temporary badge with limited access and they are accompanied permanently.	Absence of intruders	signature book system		signature book system	
7.incoming Raw and packaging materials	**Physical** **Microbiological** **Chemical**	Supplier	- Reception criteria - Release of incoming material COC, COA, declaration (certification of compliance-analysis) - Use of approved suppliers and audited.	- No contamination coming from incoming material at supplier level.	GMPS Inspection -internal audit	Q.A head	GMPS Inspection records	- Rejection or holding on defective - materials Supplier audit - Changing supplier

8.Raw and Packaging material (stored)	**Physical** contamination by damaged parts of the packaging	Mishandling	-Inspection, release of incoming raw and packaging material.	- Absence of foreign bodies due to non-conform packaging.	-internal audit	GMPS Inspection	Q.A head	GMPSInspection -internal audit report	-Reject damaged packaging material. Retraining. - Review release procedure.
	Microbiological contamination	Operators, storage conditions (pest contamination)	Following of good hygienic storage practices.	All staff are aware of hygienic issues, comply with GMP when manipulating packaging.					
	Chemical contamination	Migration of Raw material in the product		Only food grade materials are used for packaging					
10.calibration	**Chemical**	over /under dosage of ingredients	Verification, calibration activities on equipment used to monitor. - Produce, store product for consumption.	Device for measure is working properly.		GMPS AUDIT	Q.A department	GMPS Inspection report	.- Review verification and calibration plan, apply verification and calibration on device for measuring.
	Microbiological	Product parameters monitored with a non-compliant device							
11.waste disposal	**Physical**	Incorrect Waste disposal	- Waste are identified, collected and disposed of. Packaging waste is grinding and disposed of	Waste does not represent a vector of physical, attraction for pest activity, microbiological		GMPS AUDIT	Q.A department	GMPS Inspection report	Re identified waste container - make the responsibility of disposed of clear, change damaged waste container.
	Chemical	Chemical Waste not properly stored disposed of							

12.storage conditions	**Microbiological** **Physical** **Chemical** **Microbiological**	Waste not properly stored product not properly closed, non-integrity of packaging raw materials . Humidity, temperature of environment	Waste container are closable Control of temp in raw material, finished product storage area. Monitoring of ambient air. - FIFO is observed. - Only electric forklift is used. - cleaning activities in storage area. - Chemical and lubricant are stored separately. - Segregated none conform material. Training of operator. - Zoning rules.	and chemical contamination. Storage of raw materials, equipment, and lubricants does not represent a vector of chemical, microbiological and physical contaminations for finished product.	GMPSAUDITHygiene monitoring	Q.A department	GMPSInspection report	Cleaning of storage area - Adjust humidity and temperature parameters - established new zoning rules.

GMPS: good manufacturing practices. **Q.A: Quality assurance** **FIFO: first in first out** **PRP: prerequisite** programs

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تنفيذ نظام البرامج المتطلبة (PRPS) أثناء استخلاص الدقيق 72٪

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الكلمات المفتاحية:

الملخص

يتطلب بناء أنظمة سلامة الأغذية المعقدة بضع خطوات لاحقة في شكل برامج المتطلبات الأساسية (PRPs) ؛ إنها جزء من خطة HACCP الفعالة وتخلق الظروف التي يتم فيها تقليل المخاطر إلى مستويات مقبولة. تعتبر العمليات مثل التنظيف المنتظم والصرف الصحي وحتى غسل اليدين بشكل صحيح لتجنب التلوث المتبادل جزءًا من برنامج سلامة الغذاء الأكبر. يجب تلبية برامج المتطلبات المسبقة لإنشاء خطط أكثر تعقيدًا لسلامة الأغذية مثل نقطة التحكم الحرجة لتحليل المخاطر .(HACCP) يمكن لهذه العمليات أن تقلل إلى حد كبير من الضغط على تنفيذ خطط سلامة الأغذية حيث تم بالفعل معالجة المخاطر في المراحل المبكرة من عملية الإنتاج. ترتبط سلامة الغذاء بعدم وجود مواد خطرة في الطعام قبل الاستهلاك. لذلك ، فإن الرقابة الكافية عبر السلسلة الغذائية ضرورية لضمان سلامة الأغذية من خلال الجهود المشتركة لجميع الأطراف. بحيث لا توجد مواد خطرة في أي مرحلة من مراحل إنتاج الغذاء.