

**A STUDY ON THE GOOD MANUFACTURING PRACTICES FOLLOWED
BY MARICO LTD, KANJIKODE**

by

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(2016-31-013)**

MAJOR PROJECT REPORT

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Kerala Agricultural University



COLLEGE OF CO-OPERATION, BANKING AND MANAGEMENT

VELLANIKKARA, THRISSUR-680 656

KERALA, INDIA

2018

DECLARATION

DECLARATION

I hereby declare that this project report entitled '**A STUDY ON THE GOOD MANUFACTURING PRACTICES FOLLOWED BY MARICO LTD, KANJIKODE**' is a bonafide record of research work done by me during the course of project work and that it has not previously formed the basis for the award to me for any degree, diploma, associateship, fellowship or other similar title of any other University or Society.



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CERTIFICATE

CERTIFICATE

Certified that this project report entitled '**A STUDY ON THE GOOD MANUFACTURING PRACTICES FOLLOWED BY MARICO LTD, KANJIKODE**' is a record of project work done independently by **Mr. Sudarsan Subramanian** under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship or other similar title to him.

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MARICO/HR/16/18-19

22nd December 2018**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that **Mr. Sudarsan Subramanian with regn number 2016-31-013** is doing his MBA In Agri Management from College of Co-Operation Banking and Management has done her project in our factory in the Topic "A Study on the Good Manufacturing Practices" for a period of 4 Months from 1st August 2018 to 30th November 2018.

During the project period the trainee has displayed keen interest in learning and adds value to his learning's.

We found him to be sincere and hardworking and the conducts are good during this period of time.

We wish all success in all his future endeavors.



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Chapter I
DESIGN OF STUDY

Chapter I

DESIGN OF THE STUDY

1.1 Introduction

Indian food and food processing industry has seen significant growth and changes over the past few years, driven by changing trend in markets, consumer segment and regulations. These trends, as well as changing demographics, growing population and rapid urbanization are expected to continue in the future and therefore it will shape the demand for value added products in the food processing industry. The food-processing sector in India is hence an attractive sector for investment and offers significant growth potential to investors. The food processing industry provides vital linkages and synergies between industry and agriculture. The Food Processing Industry sector in India is one of the largest in terms of production, consumption, export and growth prospects. The government has accorded it a high priority, with a number of fiscal reliefs and incentives, to encourage commercialization and value addition to agricultural produce, for minimizing pre/post-harvest wastage, generating employment and export growth. India's food processing sector covers items like grains, sugar, edible oils, beverages, dairy products and a wide range of fruits and vegetables. Indian food processing industry is widely recognized as a 'sunrise industry' having huge potential for uplifting agricultural economy, creation of large scale processed food manufacturing and food chain facilities, and the resultant generation of employment and export earnings. Food processing industry in India has two major sub-segments namely food and grocery retail and the foodservice market. Of these, food and grocery retail have a whopping 92 percent share.

Over the last few years, the quality assurance schemes are becoming increasingly utilized in the food industry and agricultural sector globally. There is a growing demand for quality from customers particularly the large manufacturers and processors, and a number of food crises residues in foodstuffs, which have undermined consumers' assurance in food safety and revealed the absence of transparency in food supply chains.

Good Manufacturing Practices (GMP) as a segment of quality assurance which guarantees that food products are uniformly manufactured and well controlled as per the quality standards suitable for their use and as expected by the marketing authorization. GMP is often referred to as cGMP, with the 'c' indicating 'current' or the modern technology and systems that are needed or

are being implemented. It is an essential element in GMP systems as it prevents misinterpretation in other standards. For example, GMP requirements of one or two decades ago are almost certainly unacceptable by today's higher standards. GMP is a term that is well known globally for the effective control and proper management of manufacturing and quality control testing of foods, pharmaceutical products and medical devices. GMP covers various matters, including facilities design, documentation, production, quality control, product delivery and validation. Most GMP requirements give flexibility for individual manufacturers to decide for themselves what the best ways are to meet the necessary controls. Hence, a conclusion can be made that GMP is an 'open ended' requirement and not rigid. According to Shaikh and Sial (2007:63), the primary objective of GMP is that quality should be implemented into a product and GMP is not to be used only as a way of assessing the finished product quality. With GMP compliance and implementation, the guarantee is that the finished product not only meets the consumer expectation, but the same safety and control measures are being enforced each time a product is made throughout the entire production process.

GMP provides benefits in the sense that it reduces the operating cost of rework, customer rejects, complaints, and that it increases efficiencies and customer's acceptance of products. Due to the various benefits of GMP, it is crucial for the establishment to implement GMP guidelines without compromising. Unfortunately, there is a lack of information on GMP implementation amongst manufacturers and other quality systems such as Hazard Analysis Critical Control Point (HACCP) and International Organization for Standardization (ISO).

1.2 Statement of the problem

Food safety is highly recognized globally as the relationship between food and health. Food safety and quality remain critical issues as the epidemic of food borne illness results in high costs to the consumer, the food manufacturing industries and the economy. Global food safety initiatives have realized a number of standards and schemes that should be accepted by every major role player in the food industry in both the local and the international trade. Even though India have FSSAI (Food Safety and Standards Authority of India), an official body that enforces food safety standards, the GMP is still not enforced by the authority. However, it is rumored that few Indian manufacturing companies have been introduced and following their own GMP in their firm in order to be benefited from that.

As we all know, GMP makes sure that a company follows a set of rules and regulations, producing something that meets all the necessary quality requirements. In GMP, Manufacturing processes need to be strictly defined and well controlled, ensuring that the products are made in accordance with predefined specifications.

Nowadays there are companies who identified the scope of GMP in the marketing scenario of products and they started to advertise as they have been following strict GMPs for the quality of the product for a long period. In the customers' point of view, GMPs are important because they cannot easily detect an unsafe or ineffective product simply by looking, smelling or touching it.

In recent times there have been many controversy regarding the quality of coconut oil in Kerala. And the authority have banned many coconut oil brands in Kerala during these time. In this context, a study regarding the GMP and its implementation at Marico Ltd (Kanjikode plant), who is the market leader in coconut oil production in India, is very relevant.

1.3 Objectives of the study

- To examine the Good Manufacturing Practices adopted by Marico Ltd, Kanjikode for producing Coconut Oil.
- To assess the implementation level of GMP in Marico Ltd, Kanjikode
- To evaluate the employee awareness on GMP in Marico Ltd, Kanjikode

1.4 Methodology

This part deals with the selection of organization, period of the study, data source and technique employed for analyzing the data.

1.4.1 Selection of organization

Marico Ltd, Kanjikode

1.4.2 Period of survey

The survey was conducted between September 2018 and November 2018

1.4.3 Data source

The data used for this study is descriptive and analytic in nature. The study was based on primary and secondary data. Primary data were collected through questionnaire, pre-structured interview schedule and close observation of employees & surroundings.

Discussions have been conducted with many workers of the plant and the head of the quality department of the company, in order to understand the current scenario of GMP and its compliance.

The secondary data were collected from company annual reports, magazines, websites, journals, and e-books.

1.4.4 Sample design

The study was conducted among 40 employees of Marico Ltd, Kanjikode. Stratified Random Sampling have been used for selecting these employees. Eight prominent departments of the company were considered as different strata and from each of them, 5 employees were selected in random for the study purpose.

1.4.5 Geographical coverage

The study is based on the production activities of Coconut Oil by Marico Ltd, Kanjikode.

1.4.6 Parameters of the study

- GMP components (which are related to food processing industry)
 - Location and Surroundings
 - Premises and Rooms
 - Pest Control
 - Equipment, containers and food contact surfaces
 - Facilities/Utilities
 - Personnel
 - Receiving raw material
 - Storage – Raw materials & packaging materials
 - Processing (Oil extraction) including pre-processing
 - Quality Control
 - Finished Goods Packaging
 - Maintenance
 - Warehousing of final oil product
 - Transportation
 - Rework & control of non-conforming products
 - Traceability and recall

- Consumer awareness and Complaint handling
 - Training and Supervision
 - Documentation and records
- Employee awareness on GMP.

1.4.7 Method of survey:

A structured schedule was prepared for collecting data from the authority responsible for GMP of Marico Ltd. Questionnaires were given to employees of the company for collecting data regarding their awareness and perception on GMP of the company.

1.4.8 Data analysis

The collected data were analyzed by using simple statistical tools such as percentage analysis, Averages and other appropriate statistical tools so as to make meaningful inferences.

- **5-Point Likert Scale Analysis**

A Likert scale is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research, such that the term is often used interchangeably with rating scale, although there are other types of rating scales.

The level of perception of the employees was analyzed on the basis of 10 parameters for the middle-low level employees. These parameters include various statements which are graded in 5-point continuum allotted for the responses are in the following manner.

Responses	Score
Strongly Agree(SA)	5
Agree(A)	4
Agree to Some extent(AS)	3
Disagree(DA)	2
Strongly Disagree(SD)	1

Based on these scores, index of each parameter and statements were calculated. The formula for calculating index is:

$$\text{Index for the statement} = \frac{\text{Total score obtained for the statement} * 100}{\text{maximum obtainable score for the statement}}$$

Maximum obtainable score for the statement =

Maximum score obtainable for the opinion * total number of respondents

When the individual index was calculated, the next step is to find out the overall index of the parameters. The formula for calculating overall index for a parameter is:

Overall index for a parameter =

$$= \frac{(\text{Total score obtained for the statement} * 100)}{\text{maximum score} * \text{number of respondents} * \text{number of statements}}$$

The level of perception was categorized as High, Good, Moderate, Poor and Very Poor based on the index obtained.

Index	Level of perception
>80	High
60-79	Good
40-59	Moderate
20-39	Poor
<20	Very Poor

- **Simple percentage**

Percentage analysis is the method to represent raw streams of data as a percentage (a part in 100 - percent) for better understanding of collected data.

- **Scorecard evaluation**

This is a simple analysis method. Here the results or marks obtained in the test are converted into corresponding percentage and these are classified into different grades according to that percentage.

Score	Grade
90-100	Excellent

80-89	Good
70-79	Satisfactory
60-69	Needs Improvement
<60	Poor

- **ISO's GMP audit evaluation**

This is the method prescribed by ISO for conducting the GMP audit in the manufacturing firms. According to the criticality of questions. Higher critical questions have 4 scores and all others have a score of 2. Finally all scores are added together and classified. Below is the ISO specified classifications of scores.

Score	Grade
85-90	Excellent
80-84	Good
75-79	Satisfactory
60-74	Needs Improvement
<60	Non Compliance

1.4.9 Limitation of the study

The present study suffers from limitations of time for in-depth technical study. However, considerable care and thought have been given in making the study as systematic as possible.

1.4.10 Chapterization of the study

The study is presented in 6 chapters:

1. Design of the Study
2. Review of literature
3. Theoretical framework
4. Organizational profile
5. Data analysis and interpretation
6. Findings, conclusions and suggestions

Chapter II
REVIEW OF LITERATURE

Chapter II

REVIEW OF LITERATURE

Review of literature is a strong pillar to support the present study in order to make the study more reliable, the foundation should be built on the previous literature of the topic. A review of the past studies is useful to understand the various aspects of the problem taken up for research to plan the current study, to define concepts, hypotheses and scope, to select tools of analysis and to analyze the research problem effectively. Hence, the empirical works relating to the spices exports and overall exports are reviewed and a brief account of the review is presented in this chapter.

Even though coconut oil have much economic, cultural and medicinal significance, the academic community seems to be neglecting the sector. This may be the reason why the researches on the topic, particularly about the good manufacturing aspects of coconut oil, are very limited in number. Another important point is that majority of the published research works do not have much significance now due to the rapidly changing production procedures due to technology upgradation. However, the researcher went through the available published works as far as possible to obtain a clear theoretical background for the present study.

2.1 Findings of the literature review

Ego U. Okonkwo, (2010) have worked on "Hazard analysis and critical control points in palm oil processing in Anambra State, Nigeria". This study reveals that Palm oil processing with the indigenous technology which is mainly women's occupation at the village level in Akamili, Nnewi, Anambra State, Nigeria was assessed with the hazard analysis and critical control points (HACCP) system for food safety and quality. The analysis showed that the hazards existed at all stages of process. The critical control points were the sorting stage of the palm fruits, clarification to remove moisture and storage which were identified as the important operations in oil processing. These actions taken promoted gender empowerment; reduce hunger and alleviate poverty culminating in achieving food security in agriculture that meets the millennium development goals (MDGs). The actions recommended for eliminating the hazards in production of quality red palm oil.

H. Vermeulen, D. Jordaana, L. Korsten & J. Kirsten, (2006) has studied on "Private Standards, Handling and Hygiene in Fruit Export Supply Chains: A Preliminary Evaluation of the Economic Impact of Parallel Standards". This study reveals that with the emergence of private food safety and quality standards in developed countries fruit exporting countries in the developing world face

increasing constraints to access markets in the rich industrialized countries in the North. Producers in the South have no alternative as to make the necessary investments on farms and in pack houses to comply with the requirements of these food quality and safety standards. The export of fresh fruit is an important component of South African agricultural exports, with citrus fruit exported to markets such as Europe being of particular importance. This paper reports results from a large research project into the impact of private standard compliance on the quality of the fruit and the returns to farmers. The research process involved a multi-disciplinary analysis of Agricultural Economics and Microbiology as they analyzed the dynamics of the citrus export supply chain from the farms in South Africa to the end consumer in Europe. Sampled fruit containers were followed through the whole supply chain which allow them to provide an expose of the behavior of the different actors in the citrus supply chain and obtain some evidence of poor handling and hygiene standards by means of a comparison of the experimental observations with various relevant components of the EurepGAP control points and compliance criteria for fruit and vegetables.

Jennylynd B. James, Tipvanna Ngarmsak, (2010) has studied and concluded that rising consumer demand in the has come with greater awareness of food safety issues and increased need for convenience and quality. The fresh-cut produce sector has responded to these demands, and is currently at different stages of development across the region. Assuring the safety and quality of fresh-cut produce necessitates the selection of high quality horticultural produce for processing, and the implementation of good practice during processing operations in order to maintain produce quality and assure safety of the final product. This technical guide reviews in detail from a theoretical and practical perspective, the critical issues that must be addressed if fresh-cut products are to meet consumer and market demand for convenience, quality and safety.

Kamal Hyder, (2006) have published "GMP and HACCP for Tree Nuts and Dried Fruit Processing Plants in Afghanistan", The purpose of this manual is to assist owners and managers of nut and dried fruit processing plants in Afghanistan obtain a basic understanding components of a responsible food quality assurance system and alert them to important issues to consider when installing and operating these GMP and HACCP system. The manual will discuss basic concepts and suggest the food safety and quality assurance system that should be implemented in tree nuts and dried fruit processing plants in Afghanistan. The actual procedures and programs for nut and dried fruit processing plants in Afghanistan should be developed and installed with the help of

food processing experts, employed either by the individual plant owners or through some organization of plant owners.

Mukantwali CI, Laswai, Tiisekwa, Wiehler and Brat, (2013) has worked on "could good hygienic practices reduce the microbial population on pineapple fruits?" It was concluded that processing washed and disinfected pineapple fruits can successfully lead to production of pineapple products with an extended shelf-life. Small scale pineapple fruit processors in Rwanda should ensure good sanitary conditions of processing equipment and raw pineapple fruits to be processed. They need to make sure that disinfection of the fruits prior to processing is observed in order to effectively reduce the microbial load in the final product. The study reveals that Pineapple fruit is a major horticultural crop in Rwanda. About 27 small scale pineapple processors have entered into small business of processing different pineapple products such as juice, jam, jellies and dried pineapple slices. The aim of the study is to assess the processing techniques used by small scale pineapple processors and to determine the microbial population present at raw pineapple surface and pineapple juice before and after sanitization. The results showed that pineapple processors use a number of preservatives in processed products to increase shelf-life. Polyethylenterephthalate (PET) containers were used to package pineapple juice, jam and jelly. The PET containers were filled with products at 40°C. This resulted in products being microbiologically unstable. It is therefore advisable to fill the containers with products at 90°C to ensure microbial stability.

Nora Pap, Eva Pongrdcz, Liisa Myllykoski, Riitta Keiski, (2004) has worked on "Waste minimization and utilization in the food industry: Processing of arctic berries, and extraction of valuable compounds from juice- processing by- products". This study reveals the combined efforts of waste minimization during the production process, environmentally friendly preservation of the product, and utilization of side products would substantially reduce the amount of waste, as well as boost the environmental profile of fruit juice processing industry. The importance of the berry juices in a healthy diet is highlighted, and a cost-effective and environmentally friendly process technology is introduced. Earlier results showed great efficiency of the membrane process in grape juice processing, and based on these experiences, tests will be carried out for berry juices. An unused potential exists in berry wastes regarding valuable compounds originating from the pressing process. The peels are rich in health-promoting flavonoids and aroma compounds, while the seeds contain oils that can be recovered.

Von bockelmann and Von bockelmann (1986) in his study “Aseptic packaging of liquid food products” implies three different steps sterilization of the packaging material food contact surface, creating and maintaining a sterile surrounding in the area where the sterilized product and the sterilized packaging material/package are brought together, production of containers that are tight enough to prevent entry of spoilage organisms. As far flexible and semi rigid packaging materials are concerned, the following systems have entered the market of aseptic filling pouches or bags, prefabricated cups, from fill seal cups from roll- stock material, plastic bottles, prefabricated, paper- based laminated cartons, cartons produced from roll- stock material of paper- based laminates.

References:

Ego U. Okonkwo (2010). “Hazard analysis and critical control points in palm oil processing in Anambra State, Nigeria”, Nigerian Stored Products Research Institute Headquarters, Asa Dam Road, Ilorin, Kwara State, Nigeria.

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Jennylynd B. James, Tipvanna Ngarmsak (2010). “The rising consumer demand and food safety”

Kamal Hyder (2006). “GMP and HACCP for Tree Nuts and Dried Fruit Processing Plants in Afghanistan”, Chemonics International Inc, Rebuilding Agricultural Markets Program (RAMP).

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Nora Pap, Eva Pongrdcz, Liisa Myllykoski, Riitta Keiski (2004). “Waste minimization and utilization in the food industry: Processing of arctic berries and extraction of valuable compounds from juice- processing by- products”, Department of Process and Environmental Engineering, University of Oulu, Finland.

Von bockelmann and Von bockelmann (1986). “Aseptic packaging of liquid food products”, J. Agric. Food Chem.

Chapter III
THEORETICAL FRAMEWORK

Chapter III

THEORETICAL FRAMEWORK

3.1 Industry Profile- FMCG

The Fast Moving Consumer Goods (FMCG) sector is the key contributor of the Indian economy. This fourth largest sector of Indian economy provides employment to around 3 million people which accounts for approximately 5% of the total factory employment in the country. These products are daily consumed by each and every strata of the society irrespective of social class, income group, age group etc. FMCG sector is more lucrative because of low penetration levels, well established distribution network, low operating cost, lower per capita consumption, large consumer base and simple manufacturing processes for most of products resulting in fairly low capital investments.

The Indian Fast Moving Consumer Goods (FMCG) industry began to shape during the last fifty odd years. The growth of FMCG industry was not significant between 1950's to the 80's. The FMCG industry previously was not attractive from investor's point of view due to low purchasing power and the government's favoring of the small-scale sector.

The industry is highly competitive due to presence of multi-national companies, domestic companies and unorganized sector. A major portion of the market is captured by unorganized players selling unbranded and unpackaged products. More than 50 per cent of the total revenues of FMCG companies come from products worth Rs 10 or less. This has made the proliferation of localized brands which are offered in loose form in small towns and rural part where brand awareness is low. In last 10 years domestic players are giving tough competition to multinationals; in fact they have outstripped many MNCs in growth and market cap. Between 2005- 2014 the profit of domestic companies increased by 24% against 14% increase of multinational companies.

Urban India accounts for 66% of total FMCG consumption, while rural India accounts for the remaining 34%. However, rural India accounts for more than 40% of the consumption in major FMCG categories such as personal care, fabric care and hot beverages. As per the analysis by ASSOCHAM, companies like Hindustan Unilever Ltd and Dabur India generate half of their sales from rural India while Colgate Palmolive India and Marico constitute nearly 37% respectively.

FMCG's growth story further continued following the deregulation of Indian economy in early 1990s. With relatively lesser capital and technological requirements, a number of new brands

emerged domestically as well, while the relaxed FDI conditions led to entry of many global players in this segment.

These factors made FMCG market in India highly competitive and one of the important contributors in the Indian economy. In the mid - nineties, the growth of the sector was very fast where as it declined rapidly at the end of the decade. The initial growth was due to increase in product penetration and consumption levels. Riding on a rapidly growing economy, in-creasing per-capita incomes, and rising trend of urbanization, the FMCG market in India is expected to further expand to \$100 billion by 2025.

3.2 Coconut Oil Industry- An Overview

For thousands of years tropical countries have used coconut from the tree *Cocos nucifera*, Family Aracaceae (palm family) as an integral part of their diet and livelihood. Known as “kalpa vriksha”, in Sanskrit, this interprets as the palm which supplies all the necessities of life. The coconut is known as “pokok seribu guna” in Malaysia, translating as a tree of a thousand uses. In Philippines, it is commonly known as the "Tree of Life". All parts of the coconut palm are useful, with significant economic value. Coconut oil or Copra oil is an edible oil extracted from the kernel of mature coconuts of the coconut palm. In recent years this oil has attained superstardom in the health food world. Celebrities are adopting its use, nutritionists advocating it, and patients acclaiming its many virtues. Yet, despite the growing popularity, some people are skeptical. Its many health benefits sounds too good to be true.

Health care professionals and physicians have exhibited reluctance to use coconut oil as a health food. Saturated fats have been condemned for so many years, that they find it hard to change their opinions even when faced with evidence to the contrary. The newest high-value product, which is becoming a by-word in coconut producing countries is Virgin Coconut Oil (VCO). There is no industry standard definition for "virgin coconut oil" as there in the olive oil industry for "virgin" and "extra virgin" olive oil. Natural or mechanical means are used to obtain the oil.

However for several years, coconut oil was demonized and consumers were made to believe that coconut oil is deleterious to health as it would block the arteries and cause heart disease. The tide has turned and in recent times recognition of the positive health effects of coconut oils have emerged stronger. The use of coconut oil, especially virgin coconut oil is in vogue, though some people still remain skeptical.

In India, coconut is cultivated mainly in the coastal tracts of Kerala, Tamil Nadu, Karnataka and Andhra Pradesh - these four southern states together account for 91 per cent of the total production in the country as evident from chart 1.1. Coconut contributed Rs. 10781 crores (1.9 percent) in the value of output from agriculture during 2010-11 (at 2004-05 prices) as per CSO. The exports of coconut products crossed Rs 1200 crore during April-December, 2011-12, mainly through exports of coir and coir goods.

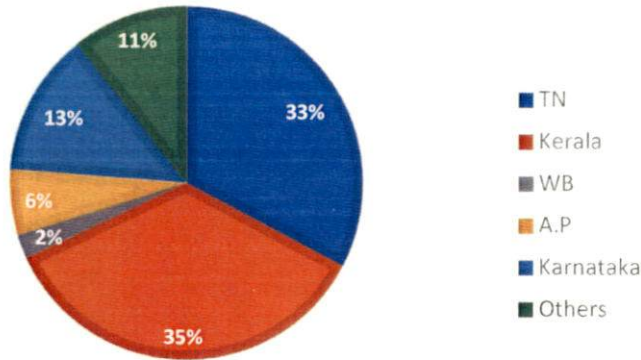


Figure 1 : Major coconut producing states in India
Source : Coconut Development Board, Kochi

Of the total production of coconuts, about 42 percent is used as mature nuts, 35 percent is used for milling copra, 8 percent for ball copra and 15 percent is consumed in the tender form for drinking purposes. Copra, the dried kernel is the chief commercial product from coconut, which is mainly used for oil extraction. Milling copra is used to extract oil while edible grade of copra is consumed as a dry fruit and used for religious purposes.

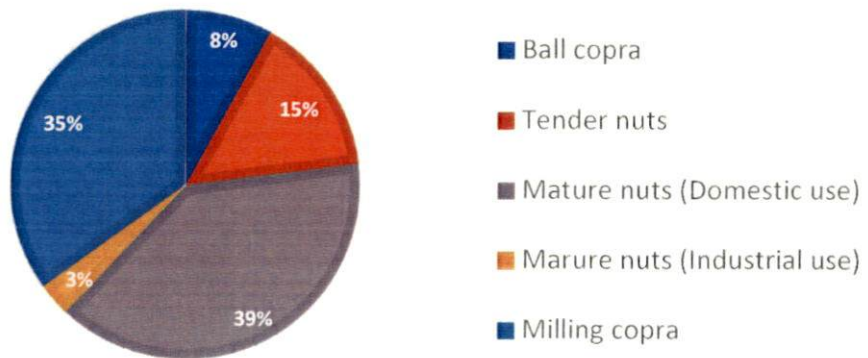


Figure 2 : Utilization pattern of coconut in India
Source : Coconut Development Board, Kochi

As per CDB, coconut oil production in the country was 4.9 lakh tonnes in TE 2011-12. Of this 40 percent is consumed for edible purposes, 46 percent for toiletry uses and 14 percent for industrial uses.

The coconut oil market has seen a moderate rise in the past decade as people's preference for coconut oil has increased due to its many health benefits. Its applications in the personal care and cosmetics like hair care and skincare has paved the way for the growth of coconut oil market. The coconut oil market has seen rise due to its ready availability and cheap prices, especially for the consumers dwelling in the tropical regions. The macro-economic factors like the ban on the export of coconut in countries such as Indonesia is affecting the growth of the coconut oil market globally. While many regions remain dependent on the exports from tropical countries for the production of coconut related products, such moratoriums may hamper the growth of the coconut oil market.

The coconut oil is the basis of coconut snacks and its usage as a substitute for various oils has further fueled the growth of the coconut oil market. The dependency of the consumers on oil-based cuisines and their willingness to opt for a better health related substitutes has boosted the growth of the coconut oil market in India. So, the coconut oil market sees high growth due to its entrant as a new breakfast spread in the India. The coconut oil market is expected to grow in tropical regions where there is more production of coconuts.

3.2.1 Major Coconut Oil Manufacturers in India

- **Parachute Coconut Oil**

Parachute, the No. 1 brand in coconut oil has 55% market share in Rs. 5 bn branded coconut oil segment. During the last 3-4 years, Marico has introduced new products in order to reduce its dependence on this single brand. Consequently, Parachute's share in the topline has come down from 70-75% in the 1990's to less than 40% currently. Marico also has Parachute Jasmine and Parachute Enrich types of coconut oil under the Parachute brand. Parachute Jasmine, the No. 2 brand in the value added coconut oil market enjoys 25% market share.

- **Dabur Anmol Gold Pure Coconut Oil**

Dabur Anmol Gold Coconut oil is a brand of edible oil used to cook food or used for cosmetic purposes. The product claims to contain pure coconut oil which is great but it

also contains an antioxidant IN 319 which is a chemical also known as TBHQ (tert-Butylhydroquinone) used to prevent rancidity.

- **Patanjali Coconut Oil**

Patanjali Virgin coconut oil is a product from the Patanjali Ayurveda Ltd. It is known for its nice fragrance, taste, antioxidants, medium chain fatty acids (MCFA), and vitamins.

- **Organic India Coconut Oil**

Organic India is known to provide the high-quality organic products from herbal teas, super foods to oils like Coconut oil and Mustard oil. The Virgin Coconut oil from Organic India is centrifuged, that is it is made from fresh coconuts that are shelled, chopped and then gently expeller pressed. This process extracts purest Coconut oil.

- **Pure & Sure Organic Coconut Oil**

Pure and sure is India organic Certified Organic Coconut oil brand of Phalada Agro Research Foundation, Karnataka . The Coconut oil from Pure and Sure is extracted from fresh coconuts that are grown without any use of chemicals, insecticides, and pesticides. They use controlled organic farming practices.

3.2.2 Major Coconut Oil Manufacturers in Kerala

- **KERA**

KERA Brand of coconut oil is produced by KERAFED (A Govt. of Kerala Enterprise) from copra of the finest quality, directly procured from coconut growers in Kerala. The copra thus procured is processed using the most modern technology. KERA have only two production facility. One in Kollam and other in Kozhikode.

- **KLF Coconad**

KLF Coconad is a 100% pure premium coconut oil made with the finest copra extracts of Kerala. Produced by KLF Nirmal Industries (P) ltd, Irinjalakkuda, Thrissur.

- **KPL Shudhi**

KPL Shudhi is simply the premium grade coconut oil available in the market from the house of KPL Oil Mills (P) Ltd, Irinjalakuda, Thrissur. Handpicked dried coconut (Copra) goes into production with at most care to factory and final product reaches the stores only after a series of quality tests.

3.3 Good Manufacturing Practices - An Overview

GMP refers to the Good Manufacturing Practice Regulations first promulgated by the US Food and Drug Administration under the authority of the Federal Food, Drug, and Cosmetic Act. These regulations, which have the force of law, require that manufacturers, processors, and packagers of food, drugs, medical devices, and blood take proactive steps to ensure that their products are safe, pure, and effective. GMP regulations require a quality approach to manufacturing, enabling companies to minimize or eliminate instances of contamination, mixups, and errors. This in turn, protects the consumer from purchasing a product which is not effective or even dangerous.

GMP regulations address issues including record keeping, personnel qualifications, sanitation, cleanliness, equipment verification, process validation, and complaint handling. Most GMP requirements are very general and open-ended, allowing each manufacturer to decide individually how to best implement the necessary controls. This provides much flexibility, but also requires that the manufacturer interpret the requirements in a manner which makes sense for each individual business.

GMP is also sometimes referred to as "cGMP". The "c" stands for "current," reminding manufacturers that they must employ technologies and systems which are up-to-date in order to comply with the regulation. Systems and equipment used to prevent contamination, mixups, and errors, which may have been "top-of-the-line" 20 years ago, may be less than adequate by today's standards.

GMPs are now considered as foundation for other food safety programs in many countries. GMPs, which are enforced by the Food and Drug Administration (FDA) in the U.S, are the procedures and programs used in food facilities to guarantee the safety of food production. In many countries like India, GMPs are not enforced by law or higher authority. However, many companies are adopting it as standards for their well-being in the domestic and international market. GMP encompasses procedures for sanitation, food safety, Hazard Analysis Critical Control Points (HACCP), and maintenance to ensure that facility is producing quality products that are safe for consumption, while still maintaining the safety of the employees.

It is found that, training employees for the GMP programs, makes them feel important to the process and encourages them to pay more attention to detail. This in turn helps with the other areas of the program, such as reduction in waste, because tasks are completed correctly in the first

time itself. By decreasing waste and increasing employee commitment, companies can expect better final products. This allows them to promote the facility as a desirable and reliable supplier. GMP are ideal for a food manufacturing establishment to adopt since it guarantee the safety of the product.

3.3.1 Components of GMP

- General requirement
 - Location and Surroundings
 - Building & Premises
 - Equipment
 - Personnel
 - Documentation
 - Emergency procedures
- Operational requirement
 - Receiving raw material
 - Handling and processing
 - Production process
 - Quality check
 - Packaging and Labelling
 - Storage
 - Transportation
 - Complaints and Product recall

Chapter IV
ORGANIZATIONAL PROFILE

Chapter IV

ORGANIZATIONAL PROFILE

Marico Ltd, Kanjicode:

Marico Limited is one of India's leading consumer products companies operating in the beauty and wellness space. Empowered with freedom and opportunity, we work to make a difference to the lives of all our stakeholders - members, associates, consumers, investors and the society at large. Currently present in 25 countries across emerging markets of Asia and Africa, Marico has nurtured multiple brands in the categories of hair care, skin care, health foods, male grooming, and fabric care. Marico's India business markets household brands such as Parachute Advanced, Saffola, Hair and Care, Nihar, Mediker, Revive, Manjal, Setwet, Zatak and Livon among others that add value to the life of 1 in every 3 Indians. The International business offers unique brands such as Parachute, Hair Code, Fiancee, Caivil, Hercules, Black Chic, Code 10, Ingwe, X-Men, L'Ovite and Thuan Phat that are localized to fulfill the lifestyle needs of the international consumers. Charting an annual turnover of Rs. 47 billion (Financial Year 2013 - 2014) across the portfolio, Marico's sustainable growth story rests on an empowering work culture that encourages the members to take complete ownership and make a difference to the entire business ecosystem. From its foundations, Marico has worked outside the box, to bring innovation to its customers through the careful creation of continuous and sustainable change.

Today, 1 out of 3 Indians uses a Marico product. From cooking oil with 'LoSorb Technology', to rice that keeps active, personalized inscription services and hair oil that comes with a battery-powered head massager, Marico believes that it pays to think differently. At the offices, everyone is a member, not an employee. The company has a flat organizational structure, with just five levels between the Managing Director and the shop floor operator. It believes in transforming the lives of all stakeholders be it the suppliers, farmers, distributors or shareholders by helping the stakeholders in maximize the true potential and it truly articulates the true Mariconian spirit – to be more. Marico is present in more than 25 countries across Asia and the African continent. The company recorded a turnover of Rs. 40.0 billion (~USD 729 Million) in 2011-12. The company's vast portfolio of enduring brands such as Parachute Advanced, Saffola, Hair and Care, Nihar, Mediker, Revive and Manjal are leading household names today. In addition, the company has recently acquired the erstwhile personal care business from Reckitt Benckiser. Marico now owns popular brands like Set Wet, Livon, Zatak, and other personal care brands

thereby strengthening its portfolio for the youth and creating a significant presence in the male grooming and post hair wash segments. Marico's international portfolio includes brands like Fiancée, Haircode, Camelia, Aromatic, Caivil, Hercules, BlackChic, Code 10 and Ingwe. The company is also present in the Skin Care Solutions segment through Kaya Skin Clinics in India, Middle East and Bangladesh and Derma Rx in Singapore. The consumers transcend countries and customs. Marico is a company that believes in challenging the status quo, to create growth and continuity in change.

- The company was founded in 1857 by Kanji Morarji and is headquartered in Mumbai, India.
- Marico Limited, together with its various consumer goods and services in India, the Middle East, Asian countries, Egypt, and the United States.
- The company provides coconut oils, edible oils, hair oils and other hair care products, fabric care products, processed foods, soaps, and baby care products, as well as skin care and ayurvedic products.

4.1 Vision and Mission

Transform in a sustainable manner, the lives of all those we touch, by nurturing and empowering them to maximize their true potential. Being a company of immense promise and possibilities, Marico is guided by an underlying dedication to help their stakeholders realize their true potential as well. This shared vision gives us a unified sense of purpose and destination, and makes the company committed to being the best in everything they do.

'COME WIN' - Marico's vision and mission is encapsulated in this acronym, which when bifurcated means the following:

- **Consumers:**

The primary focus of their efforts is not only understanding what adds greatest value to the consumer but also change and reinvent themselves if need be. Also translating the consumer's needs and desires into marketable products and an ever-expanding base of loyal consumers, with speed and a quality of response that surpasses the competition.

- **Membership:**

Wholesome membership is when a person brings his/her entire being into the organization. It also gives each member a role in articulating and shaping the destiny of the organization, which in turn, builds commitment and ownership

- **Excellence:**

Focus on policies and practices where people produce consistently superior performances and where people are encouraged to discover their untapped potential.

- **Wealth:**

Efforts must culminate in the creation of wealth. This can be done by continuously adding value in everything the company does through a variety of methods. Using sources productively, eliminating waste, reducing cycle times and costs and enhancing the consumer base.

- **Innovation:**

The future of the organization rests on their willingness to experiment, push in new and untested directions, think in uncommon ways and take calculated risks. Continuous improvement should be a part of everyday work. Acknowledging that failure is inherent in any new initiative. Company will commit resources for experimentation and invest in processes for reviewing and sharing of learning

4.2 Goals And Objectives

By 2020, Marico aspires to be among the Top 3 MNCs with leadership in their core categories. They plan to achieve this aspiration by taking greater strides in implementing Marico's vision to be the very best in how they nurture and empower all the lives they touch. They have crystalized roadmap to ensure a winning journey of transformation. Towards their Business aspirations, the Company has identified areas of transformation where it will develop top quartile capability, processes and execution excellence. They are Innovation, Go to Market Transformation, Talent Value Proposition, IT & Analytics and Cost Management. As Marico expands, they will be equally focused on facilitating their growth platforms while continuing to strengthen governance and processes. The Company's focus is aligned with that of, which is on

creating winning brands, winning culture and a winning talent pool to create a virtuous cycle of great talent and an enabling culture of driving innovation driven growth.

4.3 Company Core Values

- **Boundarylessness**

Seeking support and influencing others beyond the function and organization to achieve a better outcome/decision without diluting one's accountability.

- **Opportunity Seeking**

Identifying early opportunity signals in the environment to generate growth options

- **Innovation**

Experimentation and calculated risk-taking to increase success probability of radical/pioneering ideas to get quantum results

- **Consumer Centric**

Keeping consumer as the focus and a partner in creating and delivering solutions

- **Transparency and Openness**

Allowing diversity of opinion by listening without bias and giving and receiving critique with mutual respect and trust for the other

- **Bias for Action**

Preference for quick thoughtful action as opposed to delayed action through analysis

- **Excellence**

Continuous improvement of performance standards and capability building for sustained long-term success

- **Global Outlook**

Sensitivity and adaptability to cultural diversity and learning from different cultures

4.4 Company History - Marico Ltd

Marico is a leading Indian company with business interests in manufacturing and retailing personal consumer products as well as providing services in the beauty space. The company's history can be traced back to 1948 when the Mumbai-based Mariwala family having a presence in the trading business set up Bombay Oil Industries Ltd (BOIL). The manufacturing facilities of BOIL comprised of a coconut oil extraction plant, vegetable oil refinery and a chemical plant. Over the years, BOI expanded and diversified into branded consumer products. The promoter

family then went on to incorporate a company called Marico Foods Limited (subsequently called Marico Industries Limited and later Marico Limited) in 1988 and transferred BOIL's consumer products division to this company.

In 1990 Marico entered into an agreement with BOIL for the use of its coconut oil brand Parachute and vegetable oil brand Saffola. It also purchased a unit at Jalgaon, Maharashtra, for using it as a manufacturing base. Thereafter, to add to its product portfolio, the company made several acquisitions. The prominent amongst these is the acquisition of Procter & Gamble's anti-lice treatment business branded under the name Mediker in 1999, followed by acquisition of the facilities of Kanmoor Foods at Saswad, Maharashtra for manufacture of jams, sauces and other fruit and vegetable products in the 2000. In 2001, Marico acquired the Parachute and Saffola brands from BOIL. Marico ventured into skin care products in 2003 through the acquisition of Sundari LLC in the USA, a manufacturer of luxury ayurvedic products and having a turnover of approximately US\$ 1.1 million. This entry in the skin care products market represents Marico's first acquisition in a developed country. In 2004, Marico commenced operations under the banner of Kaya Skin Clinics; offering scientific, unisex dermatological procedures as well as skin care products. In January 2006, Marico made a direct entry into the soap market in India through the acquisition of the herbal bath soap brand Manjal from Kerala-based Oriental Extractions. Manjal had an annual turnover of US\$ 2 million through sales primarily in Kerala.

4.5 Organization structure

4.5.1 A Flat Structure:

At Marico, they are an organization, which is flat with only five levels of reporting between the Managing Director and an operator on the shop floor. Marico believe that a flat structure helps them in being more responsive to the environment while providing enriched roles for their members. Their structure defines clear roles and supporting relationships but is by no means rigid. Keeping in mind the fast and ever-changing business environs, Marico's structure is dynamic and constantly evolving.

4.5.2 Business Model and Organization:

Marico's business model is based on focused growth across all its brands and territories driven by continuously improving value propositions to consumers, market expansion and widening of retail reach. Marico aims to be the leader in each of the businesses; by heightened

sensitivity to consumer needs, setting new standards in the delivery and quality of products and services through processes of continuous learning and improvement. The model ensures that Marico is present in unique / ethnic Indian Product or Services categories where typical MNCs would not be strong. Therefore, Marico does not, unlike many other Indian FMCG Companies, get caught in MNC crossfires.

Marico is a professionally managed Company that has built for itself a stimulating work culture that empowers people, promotes team building and encourages new ideas. This has, over the years, enabled Marico to grow its stature as one of the few successful Indian FMCG Companies. Marico was awarded the National Award for outstanding work in HRD by National HRD Network in 1994 as also the award for Top Performing Global Growth Company from India at the World Economic Forum in 1997. Marico aims to be the leader in each of the businesses; by heightened sensitivity to consumer needs, setting new standards in the delivery and quality of products and services through processes of continuous learning and improvement.

4.6 Industry structure and Development

In accordance with its business direction, Marico is committed to improving the quality of peoples lives through its offerings of branded products and services. Company thus operates in two industries: Branded products the Fast-Moving Consumer Goods (FMCG) and Branded Services (Skin Care Services Industry). The FMCG industry thus comprises segments such as Personal Care, Soap, Detergents, Skin Care, Oral Care, Health and Hygiene Products, Hair care, Coconut oil, Refined Edible oils, Foods and Beverages, Dairy Products, etc. The FMCG industry in India is one of the largest in India, with an annual estimated turnover of Rs.480,000 million.

Table 1 : Volume and value growths across key segments of Marico

Categories	Q4 FY18		FY18		% of FY18 India Business Turnover
	Value Growth	Volume Growth	Value Growth	Volume Growth	
Parachute Coconut Oil	24%	-5%	22%	2%	36%
Value Added Hair Oils portfolio	9%	11%	4%	4%	26%
Saffola (Refined Edible Oil)	-3%	-1%	-4%	-1%	18%

4.7 Marico's Growth Philosophy

Over the medium term, Marico aspires to be an admired emerging marketMNC with leadership in two core categories of nourishment and male styling in following regions – South Asia, South East Asia, Middle East and North Africa and South Africa. Marico plans to meet this aspiration by seeking to win amongst consumers, trade and talent. Towards this goal, the Company has identified 5 areas of Transformation where it will develop top quartile capability, processes and execution excellence ahead of growth - Innovation, Go to Market transformation, Talent Value Proposition, IT & Analytics and Cost Management.

This strategy will be executed synergistically under the 'One Marico' umbrella. As the Company scales up, it has to maintain a delicate balance between entrepreneurial way of working while continuing to strengthen governance and processes. The Company's focus will be on creating winning brands, winning culture and a winning talent pool to create a virtuous cycle of great talent and an enabling culture driving innovation driven growth.

4.8 Performance of Marico India and Marico International

In accordance with the revised Ind-AS, the Company has organized the business into two categories viz, India & International. Accordingly, the Company has reported its segmental results for these categories. The Segment Result as a % of Segment Revenue of the India business decreased in Q4FY18 and FY18 due to significant increase in the input costs. The increase in capital employed in India business is due to higher inventory on account of inflation in copra and other key input prices as well as position build up in key commodities. PBIT pertains to Profit before Interest and Tax directly attributable to both the segments. Corporate taxes, interest income and interest expense are kept unallocated for the purpose of segment reporting. Accordingly, the segment capital employed does not reflect the assets and liabilities corresponding to above income and expenses. Goodwill has been allocated to respective businesses.

Table 2 : Performance of Marico Ltd

Particulars	Q4FY18	Q4FY17	FY18	FY17
Segment Revenue				
India	1,157	1,035	4,969	4,579
International	323	287	1,364	1,356

Segment Result (Profit before interest and tax and exceptional item)				
India	240	251	1004	1059
International	34	22	210	199
Segment result as % of segment revenue (PBIT)				
India	20.7%	24.2%	20.2%	23.1%
International	10.5%	7.5%	15.4%	14.6%
Capital Employed (Segment assets – Segment liabilities)				
India			1343	993
International			700	627

4.9 Reach

With a presence in chosen markets across emerging countries of Asia and Africa, Marico is further expanding in adjacent markets of South Asia, the Indo-China region as well as new export markets

Marico today touches the lives of 1 out of every 3 Indians. Marico sells over 15.2 crore packs every month through about 4.7 million retail outlets services by its nationwide distribution network comprising 4 Regional Offices, 31 carrying & forwarding agents (CFAs) and about 5,600 distributors and stockists. Marico's distribution network covers almost every Indian town with population over 10,000. The table below provides an indicative summary of Marico's Distribution Network in India.

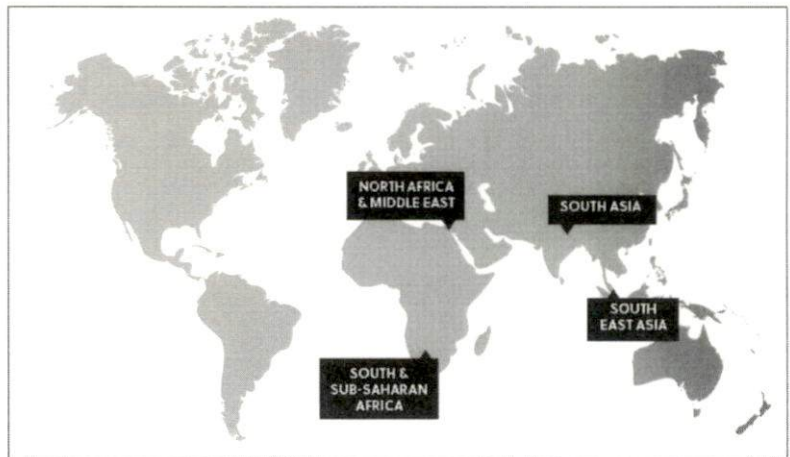


Figure 3 : Global presence of Marico Ltd

Table 3 : Marico's distribution network

	Urban	Rural
Sales Territories	253	52
Town's covered	600	53,000
Distributor	740	-
Super Distributor	-	140
Stockists	-	4,694

4.10 Brand Profile

Over the past 20 years, Marico has been continually improvising and building new brands. Marico's Consumer Products Business houses well-known brands such as Parachute, Saffola, Hair and Care, Nihar, Mediker, Revive, among others, which occupy leadership positions in most categories- Coconut Oil, Hair Oils, Post wash hair care, Anti-lice Treatment, Premium Refined Edible Oils, niche Fabric Care etc. With the acquisition of the erstwhile personal care business from Reckitt Benckiser Marico now owns popular brands like Set Wet, Livon, and other personal care brands thereby strengthening its portfolio for the youth and creating a significant presence in the male grooming and post hair wash segments. Every month, over 70 Million consumer packs from Marico reach approximately 130 Million consumers in about 23 Million households, through a widespread distribution network of more than 2.5 Million outlets in India and overseas.

Marico's products are mainly spread across in 7 categories. They are;

- Coconut Oil
- Hair Oil
- Hair Serum
- Anti-Hairfall
- Male Grooming & Styling
- Wellness
- Skincare

Marico serves their customers through their well-established 12 brands. They are;

4.10.1 Parachute Coconut Oil

Parachute is premium edible grade oil, a market leader in its category. Synonymous with pure coconut oil in the market, Parachute is positioned on the platform of Vital Nourishment today. From a loosely available commodity to a path-breaking brand, Parachute pioneered the switch from coconut oil sold in tins to plastic. Parachute is also available in pouch packs, to service the rural sectors, increasing penetration. The positioning of Parachute has evolved over time. From the initial stand of purity to that of clarity to the 'Coconut Dream' theme, with a new look and logo, to today's positioning of vital nourishment. Over the years, the brand has seen a lot of innovations in packaging, sizing and tamper-proofing. Parachute enjoys enormous loyalty in urban, semi-urban and rural market.

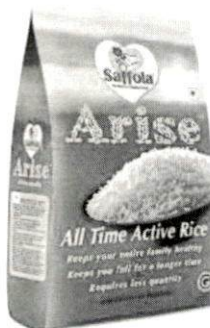


4.10.2 Saffola



Saffola is a heart care brand in the foods category in India. It has several products in its portfolio which include edible oils, functional foods, rice and salt. Saffola is known to be a brand which is good for heart and recommended by doctors. For the last 10 years, Saffola life has been educating Indians on preventive heart care through the year. Since risk factors of Cardio Vascular Diseases (CVD) start early in India and prevention of these diseases requires an integrated life course approach, Saffola has over the years built an ecosystem which works actively towards adopting a healthier lifestyle. Current product portfolio contains:

- Saffola Oils
- Saffola Aura
- Saffola Arice
- Saffola Muesli
- Saffola Oats
- Saffola Masala Oats
- Saffola Salt Plus
- Saffola Active Slimming Nutri-Shake



4.10.3 Parachute Advanced

Parachute Advanced stands for care, nurturance and beauty, and tries to fulfil the needs of its myriad consumers through various offerings in the portfolio spanning hair care. Major products under Parachute Advanced brand are;

- Parachute Advanced Scalp Therapie
- Parachute Advanced Men
- Parachute Advanced Jasmine Hair Oil
- Parachute Advanced Deep Conditioning Hot Oil
- Parachute Advanced Coconut Hair Oil
- Parachute Advanced Ayurvedic Hair Oil
- Aloe Vera Enriched Coconut Hair Oil



4.10.4 Parachute Advanced Body Lotion

Parachute Advanced Body Lotion has been crafted with a breakthrough formulation having 100% natural moisturizers working with a unique product action of penetrating the skin and strengthening the skin barrier from within. At the same time, its light, non-sticky formulation is quickly absorbed by your skin - keeping it soft, smooth and irresistible to touch. The Parachute Advanced Body Lotion is available in market in following variants;

- Parachute Advanced Soft Touch
- Parachute Advanced Deep Nourish
- Parachute Advanced Refresh
- Parachute Advanced Butter Smooth
- Parachute Summer Refresh Lotion Spray



4.10.5 Nihar Naturals

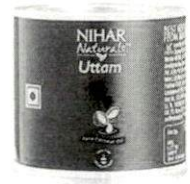
The Nihar Naturals portfolio today offers quality hair care solutions for the needs of the progressive woman. Nihar Naturals is the market leader in East India. Nihar Naturals hair oils range offers quality solutions for different hair care needs of the women of today. The current product portfolio includes:



- Nihar Naturals Coconut Hair Oil
- Nihar Naturals Perfumed Coconut Hair Oil
- Nihar Naturals Shanti Badam Amla Hair Oil
- Nihar Naturals Sarson Kesh Tel
- Nihar Naturals Cooling oil
- Nihar Naturals Extra Care

4.10.6 Nihar Naturals Uttam Coconut oil

A 100% pure coconut oil from the house of Nihar, available in a modern packaging that keeps it pure till the last drop.



4.10.7 Hair & Care



Hair & Care is youthful and contemporary, and is the teenage girl's choice as she takes her first steps into the adult world. Hair and Care offers the potent nourishment of Herbal Proteins extracted from Neem and Tulsi that that deeply nourish hair and help reduce hair fall by up to 50%. And its unique non-sticky formula gives you free-flowing, stylish hair even after oiling. Hair and Care Herbal Proteins is available in 50ml, 100ml, 200ml, 300ml and 500ml bottles. And for those

special moments when the hair needs some extra style, Hair and Care offers Silk-n-Shine Hair Potion. Enriched with the natural goodness of Fruit Vitamins, its unique formulation instantly makes hair soft, smooth and silky. Major products are;



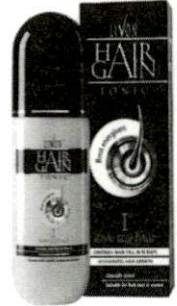
- Silk-n Shine
- Hair & Care Fruit Oils
- Hair & Care Dry Fruit Oil

4.10.8 Livon



The Livon brand by Marico is the brand that built the serum category in India. It's main focus is on the fashion factor of the hair. The products under Livon provides salon finish hair treatments and styling. Major products are:

- Livon Serum
- Livon Hair Gain Tonic
- Livon Conditioning Cream Colour



4.10.9 Revive



Revive was launched in 1993 and is another Marico product that created a market where none existed. Revive is an Instant Cold Water Starch, the ONLY product of its kind. Formulated with the latest International technology to give clothes uniform, strong starching, it is uniquely positioned on the platform of making your 'Clothes Look Like New'. The brand is available as Revive Liquid and Revive Powder.

4.10.10 Mediker

Mediker has become a household name that the nation trusts since 1968. Marico acquired Mediker from Procter & Gamble, in July 1999. Mediker Anti-Lice Treatment has transformed lice removal into a painless activity, replacing the traditionally painful lice comb with a wash-off format. Mediker contains actives such as neem, camphor and sitaphal extracts. Mediker is also available in an oil format for those who prefer using oil in their regular regime. It contains coconut oil, in addition to neem and camphor. Mediker has been clinically tested and proven to be completely safe to use, with no side-effects. Mediker today has two products in its portfolio:

- Mediker Anti Lice treatment
- Mediker Anti Lice Oil.



4.10.11 True Roots

Marico's True Roots Botanical Hair Tonic, is a first-of-its kind innovation, that works by increasing the melanin levels in the hair roots and thereby delays hair greying. It is formulated at TrueRoots Lab with Apigenin, an extract of chamomile flowers and powerful botanical actives



that increase the melanin levels in the hair roots. True Roots is a revolutionary botanical hair tonic that delays hair greying from the roots. True Roots Botanical Hair Tonic is dermatologist tested and clinically proven to show no new greys in 90 days. True Roots Botanical Hair Tonic is easy and convenient to use and comes in a delightful spray format. Its aqua based, non-sticky formula gets easily absorbed in the hair roots & does not need hair to be washed off after usage. In addition to increasing melanin levels to delay greying, it also makes hair healthy, soft and provides conditioning.

4.10.12 Set Wet

Set Wet, a male grooming masterbrand, has always played to win. It revels in changing norms, uncovering new ways to play and taking users on a journey never to be forgotten. Set Wet is a brand with an agenda of making men feel great again by bringing back confidence in them. Set Wet plays a key role by standing by the man of today, showcasing the very best of him to boost his confidence and self-esteem. The brand partners him in putting up a show to gain admiration from peers and women in particular. So that the next time he looks into the mirror, he sees a playful, joyful version of himself, smiling back at him.



It champions the idea that the way to impress the modern woman lay not in being regressive and stereotypical, but in enhancing and putting on display their innate playful, sexy, charming side with a simple motto: 'It's Not Sexy Till You Show It', or as we say ' Sada Sexy Raho.' Major products under Set Wet brand are;

- Set Wet Gel
- Set Wet Deo
- Set Wet Beard Cream

Chapter V
***A STUDY ON THE GOOD
MANUFACTURING PRACTICES
FOLLOWED BY MARICO LTD, KANJIKODE
- AN ANALYSIS***

Chapter V

A STUDY ON THE GOOD MANUFACTURING PRACTICES FOLLOWED BY MARICO LTD, KANJIKODE- AN ANALYSIS

5.1 Good Manufacturing Practices adopted by Marico Ltd, Kanjikode

Since Marico Ltd, Kanjikode mainly deals with the production of cent percent pure edible grade coconut oil, which comes to the market under the brand name Parachute coconut oil, having a food safety policy is necessary. But in Marico they have a policy of 'Think Consumer To Be Big'. Through this policy, Marico anticipates each category of consumer's need and provide them what they need. This proactive kind of policy and research is the reason behind the implementation of GMP in their production plants. In India, GMP is not a mandatory system. However, Marico implemented it for providing the consumers more quality product.

We can have a section wise look into the GMP specifications, which is followed by Marico Ltd at their Kanjikode production plant.

5.1.1 Location and Surroundings

The selection of the right location for the food facility is important to minimize any food safety risk and to ensure that neighboring industries and activities do not become a contamination source due to transferring hazards by air or water or increasing the risk of pest infestation.

a) The food establishment shall be located away from any polluting industry or adequate measures shall be taken to enclose and protect the manufacturing premises from any possible environmental hazards.

b) The site boundaries shall be clearly identified with appropriate access control to prevent any chances of theft and sabotage. Dogs, cats or other pet animals should not be allowed to enter the premises.

c) The site shall be maintained in good order. Where buildings are surrounded by grassed or planted areas, a clear space should be provided between the grassed planted areas and the building. Such grassed/planted areas should be regularly tended and maintained. The roads, yards and parking areas should be maintained (for example, free from accumulated garbage, pest activity). There should not be any stagnant water surrounding the facility.

d) If the building is used for residential purpose also, then there shall not have any direct access to the food premises. The activities should be compartmentalized if feasible to prevent cross contamination.

e) The manufacturing premises shall be located away from flood prone area. Where the premises are located in areas prone to flooding, it is recommended that height of the manufacturing area should be suitably elevated to prevent the risks due to flooding.

5.1.2 Premises and Rooms

The guidelines for premises and rooms are categorized into few for the accurate and convenient implementation.

5.1.2.1 Construction, design and layout

Plant internal layout should be designed, constructed and maintained in such a way to facilitate good hygiene and manufacturing practices.

a) The building shall provide adequate space with a logical flow of materials, products, personnel, layout of equipment and to the extent that is practicable physical separation of raw from processed areas.

b) The plant layout should have a proper space for inward and outward vehicle movement. Conveyors and openings intending for transfer of materials shall be designed to minimize any cross contamination from foreign matter, pests, etc.

5.1.2.2 Internal structures

a) Walls and partitions

- Shall be provided where necessary to protect food from contamination
- Shall have a smooth surface, impervious and preferably plastered
- Shall be easily cleanable
- Shall be sealed to prevent the entry of dirt, dust and pests;
- Shall be free from flaking paint or plaster, finished and maintained to prevent the accumulation of dust, minimize condensation, and shedding of particles
- Wall floor joints should be curved in processing and packaging areas to facilitate cleaning

b) Ceilings

- Shall be sealed to prevent the entry of dirt, dust and pests;
- Shall be free from flaking paint or plaster, finished and maintained to minimize the accumulation of dust, condensation, mould growth, and shedding of particles
- The overhead fixtures shall be suitably protected so that they do not act as contaminants in case of breakage.

c) Floors

- Shall be non-slippery, sloped appropriately, to allow adequate drainage.
- Shall be maintained in good repair with no cracks and crevices
- Shall be made of materials that are durable and easy to clean such as Epoxy coated floors or kota stone flooring or any other suitable flooring.

d) Windows

- Shall be constructed to minimize the accumulation of dirt
- Windows, roof vents or exhaust fans that open to the external environment shall be fitted with removable and cleanable insect-proof screens;
- Where open windows would result in contamination, windows must remain closed and fixed during operations.
- The ends should be secured to prevent the entry of pests.
- If window panes made of glass, it should be laminated.

e) Doors

- Shall have smooth, non-absorbent surfaces
- Shall be easy to clean
- Shall be close-fitting and with suitable precautions to prevent entry of pests
- Gaps if any between the door and the floor should be closed with suitable material like rubber strips, polyurethane etc to avoid pest entry.
- Entry/exit points should be suitably protected with such as strip PVC/air curtains/ wire mesh doors/ doors with self closing devices etc. To ensure dust, insects, birds and animals are kept out.

5.1.3 Pest Control

- a) Buildings shall be kept in good condition to prevent pest access and to eliminate potential breeding sites. Holes, drains and other places where pests are likely to gain access shall be kept sealed. Wire mesh screens, for example on open windows, doors and ventilators, will reduce the problem of pest entry. Animals, birds and pets shall be excluded from the food premises.
- b) There should have a nominated person to manage pest control activities, and/or with the help of an external appointed contractors. Major pest activities for rodent, lizard, cockroaches, flies, rats, mice and vermin, insects; to exclude from the establishments and processing areas .
- c) List of approved pest chemicals, their concentration for uses with their MSDS (Material Safety Data Sheet) records shall be available at site. Treatment of chemicals, with appropriate limits, shall be carried out by trained operatives without posing a threat to the safety or suitability.
- d) If any pest treatment chemicals / tools stored inside plant facility shall always be kept under lock & key.
- e) Pest control devices like bait stations / Pesto flash lay out map should be maintained.
- f) Detectors and traps shall/be designed and located so as to prevent potential contamination of materials, products and facilities such as having poisonous baits outside premises and glue traps inside processing area.
- g) Pest control services reports shall be maintained and verified. Pest control program effectiveness could be measured through pest agency monthly audit and trend analysis report and relevant actions for improvements should be taken.
- h) Food or any other material (like in case of termites in wood) found to be infested shall be handled in such a way to prevent contamination of other food materials, products or the establishment.

Table 4 : Pest control 4 D method

1D-Deny Entry- Preventing Entry	2D-Deny Shelter- Elimination of Harborage of Pests	3D-Deny Food- Eliminate food sources to pests	4D-Eradication of Pests
<ul style="list-style-type: none"> • Seal all holes, crevices at ceilings, walls and floors • Threshold clearances of doors < 6mm, fix 	<ul style="list-style-type: none"> • Avoid False sealing in processing and storage area • Repair defects on walls, floors, ceilings, 	<ul style="list-style-type: none"> • Store all foods and condiments in sealed /covered containers. • Floor free from food remnants • Prohibit preparing food and utensils 	<ul style="list-style-type: none"> • Clean & disinfect pest infested places, clothing and equipment • Use Insectocuter-Place 4. 5 to 6m away from food handling area

<p>metal kicking plates.</p> <ul style="list-style-type: none"> • Double door / air curtains / strip curtains / mesh screens, self-closing doors at appropriate locations Missing / damaged gratings of drains installed /replaced 	<p>woodwork & other structures</p> <ul style="list-style-type: none"> • Remove disused / obsolete articles from food premises 	<p>cleaning at other places</p> <ul style="list-style-type: none"> • Store refuse in dedicated closed container and discard periodically to prevent accumulation. • Surface channels and gratings clean and clear of food remnants 	<ul style="list-style-type: none"> • Use low wall mounted insectocutors • Clean insectocutor every week • Cover all foods during Pest control treatment • Use glue pads inside and rodent boxes outside the processing areas • Pest or chemical contaminated food be discarded.
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5.1.4 Equipment, containers and food contact surfaces

- a. Equipment and containers that come in direct contact with food (including food contact surfaces) and used for food handling, storage, processing, packing shall be:
- made of impervious, corrosion free material which do not impart any toxicity to the food material and shall be easy to clean.
 - located, designed and fabricated so that it permits necessary maintenance and periodic cleaning.
 - kept in good order, repair and condition as to minimize any risk of contamination. These include free from cracks, crevices, open seams etc.
 - shall be placed to achieve easy and effective cleaning of adjacent areas like floors, walls, ceilings and other surfaces.
- b) All openings such as manholes, inlets, outlets, draining out of points, etc. should be made such that they can be locked and/or effectively sealed.
- c) The use of metal vessel, metal container or other equipment made up of metal, which is likely to cause metallic contamination and is injurious to health, should not be used in the preparation, packing or storage of food products. E.g. Copper, copper alloys, iron etc. should be avoided as they have catalytic effects for oxidation.
- d) They shall be located, designed and fabricated so that it permits necessary maintenance and periodic cleaning. For e.g. The preferred design of tanks should be:
- Tall, narrow tanks to minimize contact surface area of oil and tank. This will avoid air and oxygen contact, if any.

- Suitable shape is vertical circular cross section tank with self-supporting fixed roof.
- Tank bottoms should be conical or sloped (with a sump) to facilitate draining.

NOTE:

Tank construction material and for ancillary equipment (including heating facilities):

- Should be inert to oils and fats; and should be food contact in nature.
- Stainless steel – is the most preferred metal and is recommended for storage and transportation of “fully” refined oils and fats.
- Mild steel is acceptable for “crude” and “semi-refined” oils; and can be used with coating of an inert material inside. (E.g. phenolic epoxy resin, or zinc silicate)

**The suitability for contact with oils and fats and the method of cleaning should be obtained from coating manufacturer*

5.1.5 Facilities/Utilities

5.1.5.1 Water supply

- Adequate supply of potable water shall be available to meet operational and clean-up needs.
- Water including steam used as a product ingredient or in contact with food or food contact surfaces or used for equipment and plant cleaning shall be potable.
- Potable water quality shall be as specified in the latest edition of BIS standard on drinking water (IS 10500). Potable water shall be analysed at least semi-annually to confirm that it meets the requirements of this standard.
- Where it is necessary to store water, storage facilities including the storage tanks and water pipes shall be adequately designed, made of material that is non-toxic, corrosion resistant material and periodic cleaned and maintained to prevent contamination and records of the same should be maintained. The tanks shall be covered to prevent access by animals, birds, pests and other extraneous matter.
- Where water filters are used, they shall be regularly changed or effectively maintained.
- Recycled/condensate water used in processing or as an ingredient shall not present risk of contamination. It shall be of the same standard as potable water.
- Non potable water (for use in, for example, steam production, firefighting & refrigeration equipment and other similar purposes where it will not contaminate food) shall have a separate

system. Non-potable water systems shall be identified and shall not connect with, or allow reflux into, potable water systems.

- h) Colour coding of separate pipelines for potable water and non-potable water is recommended.

5.1.5.2 Drainage and waste disposal

- a) Adequate drainage and waste disposal systems and facilities shall be designed and constructed so that the risk of contaminating food or potable water supply is avoided.
- b) Drains shall be designed to meet expected flow loads, constructed so as to prevent accumulation or back flow of waste water. Drains should be located so that they can be easily and effectively cleaned and inspected.
- c) Drains shall be equipped with appropriate traps to effectively capture contaminants.
- d) Containers for holding waste should be of adequate size, made of impervious material, leak-proof, clearly identified, easy to clean, and where necessary to disinfect shall be provided in the premises for collection of waste material. These shall be kept closed, preferably foot operated or arrangements shall be made to prevent cross contamination.
- e) Waste stores and dust bins must be kept appropriately clean, free of pests and in closed conditions and shall be disposed as per local rules and regulations including those for plastic and other non- environment friendly materials.
- f) Waste disposal shall be done in accordance with specific requirement of Factory Act/state pollution control board.
- g) Its recommended as best practice to store bio degradable & non degradable waste separately.

5.1.5.3 Lighting

- a) Adequate natural or artificial lighting shall be provided to enable the personnel to operate in a hygienic manner.
- b) The intensity of light should be adequate to the nature of the operation.

Table 5 : Recommended interior light intensities (in lux)

Functional Ares	Lux
Product inspection	1180-1400
Processing areas	590-700

Packaging	750-860
Maintenance Areas	750-860
Finished Goods Warehouse	215-323
Raw material receiving	215-320
Administrative offices	645-970
Cafeteria	430-540
Locker and rest rooms	320-540

c) Lighting fixtures shall be protected to ensure that food is not contaminated in case of breakages.

5.1.5.4 Storage facilities

The storage facilities shall be designed and constructed to:

- provide protection from dust, condensation, waste, pest access and harbourage and other sources of contamination.
- be easy to maintain and clean. All materials and products shall be stored off the floor and away from walls with sufficient space to allow cleaning and facilitate pest control activities.
- have separate storage facilities for copra, packing materials, and oil cake.
- have separate storage facility for storing rework, returned, recalled or non-conforming product.

5.1.5.5 Air circulation and ventilation

- a) Food premises shall have adequate natural and/or mechanical ventilation including air filters, exhaust fans, should be provided.
- b) The air shall not flow from contaminated to clean areas.
- c) It is recommended to have adequate ventilation in sanitary conveniences.

5.1.6 Personnel

- a) All personnel should wear uniform & safety shoes.
- b) Where ever applicable, the use of aprons, beard covers, Shoe cover and head covers should be Worn. Head covers should be worn as per instructed.
- c) Food items/tea/water bottles etc, are not allowed in the production, packaging and storage area. All food items will be maintained in the amenity center.
- d) Smoking, chewing tobacco/supari/pan masala and taking snuff are strictly prohibited in the factory premises.
- e) Coughing, sneezing should not be done on open product and shall be in hand cloth and ensure to clean the hands before commencing work.
- f) All employees need to voluntarily report any illness, wounds, and cuts to the supervisor. Appropriate actions will be taken.
- g) Long Nails, False nails, Biting nails is not allowed in production/packaging/storage area.
- h) Finger nails should be trimmed and cleaned.
- i) No jewelers, wrist watches, sticker bindis, auspicious threads, Wedding rings with stone of any kind are allowed in the production area.
- j) Plain wedding ring without stones, single piece jewelers allowed in the production area.
- k) Studs in exposed parts of the body such as noses and eyebrows shall not be worn.
- l) Spectacles without strings will not be allowed in the production area. Spectacles with fiber glass can be allowed.
- m) No eating, chewing of gum or spitting is allowed in the production/packaging/storage area.
- n) All employees are required to wash their hands thoroughly before and after work, during breaks after visiting toilet and whenever they are soiled or contaminated.
- o) No excess perfume/Scented oil/Scented cosmetics are allowed by the employees in production area.
- p) All the Personal belongings/Clothing/Medicines stored In designated locker in the change room which is maintained In amenity center.

There are some other specific guidelines regarding personal hygiene facilities of all the employees, that shall be followed to ensure that an appropriate degree of personal hygiene is maintained. They are:

a) Hand washing facility

Proper hand washing is critical in preventing the spread of bacteria. It greatly reduces the chances of contaminating food and food contact surfaces. All employees must wash their hands thoroughly and frequently.

All employees should wash their hands at the designated hand washing station. For proper hand washing, everyone should follow the standard hand washing procedures.

Hand Washing Procedures:

1. Pre-rinse hands with warm clean water.
2. Apply soap.
3. Rub hands, fingers, nails and wrists to form a lather for a minimum of 20 seconds.
4. Rinse hands with warm clean water.
5. Dry hands hygienically (ex: disposable paper towel).

[If there is not an automatic tap, use the paper towel to turn the tap off.]

[Use the paper towel to open the bathroom or station door.]

[Throw paper towel in a designated waste bin.]

[Same steps apply when wearing rubber or plastic gloves.]

Note: A poster with hand washing instructions should be pasted by the hand washing sink.

According to the company's GMP, all employees should wash their hands:

- when starting or returning to work
- after using the washroom
- before handling copra and packaging materials.
- before putting on gloves
[change disposable gloves regularly, in the same way you would wash your hands regularly if not wearing gloves]
- after touching hair, ears, nose, mouth, etc.
- after handling garbage or waste bins
- after lunch and breaks
- every time hands become contaminated

b) Toilets

- Adequate number of toilets facility shall be provided. Arrangements should be made for separate toilets for males and females.
- They should not directly open in copra handling areas.
- Signs informing staff about the need to wash their hands before leaving the toilet area should be placed in easily visible places.]
- The toilet area should be cleaned and disinfected on a regular basis.
- Should post a cleaning schedule so that there is a record of when cleaning has taken place.

c) Rest & refreshment room

- Appropriate facility should be provided for employees.
- It shall not directly open to manufacturing/processing/packaging areas.
- There should be separate waiting rooms (with toilet facility) for the transporters.

A display board mentioning 'Dos' and 'Don'ts' for workers shall be posted in a prominent place inside the premises, in English and local language, for all to understand. This will help all the employees to maintain their alertness on good hygiene practices.

d) Visitors Policy

- Visitors shall read, understand & follow personal hygiene policy & Jewellery policy.
- All visitors will be given gate pass and instructed to fill the declaration form on back side of the gate pass.

MARICO LIMITED, KANIYODE
VISITOR'S GATE PASS

OF No: 13761 Date: 26 Nov 2019 Time: 10:30 AM Gate No: 124/129

Name: S. DASHAN Address No: NA

Name of Department: KERALA AGRICULTURAL UNIVERSITY

Person to contact: PRANAV

No. of Persons: 2

Purpose of visit: OFFICIAL

Carrying items follows: Mobile

Visitor's Signature: _____ Security Signature: _____

Visitor Declaration Form

1. Have you been in contact with anyone suffering from the above symptoms within the last two weeks?
 2. Are you suffering from common fever, cough, sore throat, difficulty in breathing or productive cough?
 3. Do you have any wound, personal safety issue (e.g. laceration, abrasion, etc.)?
 4. Have you any discharge from the nose, throat, eyes, mouth or pain?
 5. Are you, at the present time, suffering from any skin condition (eczema, dermatitis, boils or optic rash, etc.)?

6. Other's, please specify _____

7. Carrying items: Chemicals Drugs/Medicine Conductive Electronic gadgets

Other's, please specify _____

I declare that:
 1. I understand the questions and that my responses are true to the best of my knowledge.
 2. I will not carry any prohibited items inside the facility (Guns, Fire arms, Pan/Machete, Unnecessary arms etc).
 3. I have read the visitor information notice on hygiene requirements, health & safety and fire emergency plan and agree to abide by them.
 4. Any information which is obtained in business connection will not be shared with irrelevant parties.

Visitor's signature: _____ Security Signature: _____ Visitor Signature: _____

This visitor is permitted to go into the factory. YES / NO

Figure 4 : Visitors gate pass and Declaration form - Sample

- The Security should check and ensure the person has filled the declaration form properly and kept all restricted item in gate (If any prohibited items with visitor, the security have right to block that materials in gate. keep the material in gate)
- If the visitor have any illness or having any prohibited item(necessary to bring inside to the plant), The security should inform to visitor control FPR (HR or concerned person) and entry is only by the instruction from FPR.
- After verification the security drive the visitor to Administration office. The Person whom they want to meet will come to admin office.
- Visitors will be allowed inside the production area along with Marico representative.
- The securities should ensure the visitor does not enter the plant without the permission of concerned FPR.
- All visitors entering the production, area are required to be properly attired.
- Outside contractors should have suitable personal protective equipment when performing any work inside the company premises. This includes, if applicable, safety footwear, eyewear, hearing protection and clothing cover garments. All clothing should be clean (free of dirt, oil) and pose no food safety threat when working in or around food production areas.
- Visitors are not allowed to carry any articles, containers, dangerous goods, camera, armed items or drugs into the production facility.
- The company assumes no liability for any harm or injury that may occur to any visitors during their visit.

5.1.7 Receiving raw material

- a) All copra, the raw material should be procured from approved suppliers or through the company's exclusive collection centers. An approved supplier is the one which is evaluated as per the quality of copra supplied and other relevant factors like reliability, punctuality and the volume of sales.
- b) No raw material shall be accepted by a supplier if it is known to contain any chemical, physical or microbiological contaminants including adulterants, which would not be reduced to an acceptable level by normal sorting and/or processing.
- c) All raw materials consignment should be inspected and sorted before processing. The quality check procedures should be done in place to confirm that the incoming materials meet the

documented specifications through certificate of analysis, visual inspection, laboratory testing etc.

- d) Records of raw materials shall be maintained for traceability.
- h) Plant should have a separate area for receiving Crude oil or Oil seeds. Raw materials (oil seeds/ crude oil) are received according to the storage and processing capacity of the oil processing plant.
- i) All bulk tankers/ containers receipt shall be checked for seal integrity / previous cargo / fitness checklist at the time of receipt.
- j) The incoming vehicles that bring the oil seeds should be checked for cleanliness and hygiene i.e. the trucks are clean, with no pests or dirt, with no strong odour other than that of the raw material.

Table 6 : Preferred quality specification of copra at receiving stage

Factors	Acceptable Limit (in percentage)
Moisture content	Up to 10%
Oil content	Minimum 58%
Free Fatty Acids (FFA)	About 1%
<u>Inferiors</u>	
Rubbery	10%
Burnt	5%
Green	10%
Smokey	25%
Insect/infected	0%



Figure 5 : Digital moisture meter used for checking the raw materials

The total inferiors allowed is calculated by the below following equation.

$$G + S + 4B \leq 45\%$$

The total allowed inferiors is 45 per cent. The samples with inferiors higher than 45 per cent should be rejected.

According to the level of inferiors, the samples/Copra should be graded into four.

Table 7 : Grade classification of copra

Inferiors	Grade I	Grade II	Grade III	Grade IV
Green	3%	5%	8%	10%
Smokey	8%	15%	20%	25%
Burnt	2%	3%	5%	5%
Total Inferior	8%	15%	30%	45%

5.1.8 Storage – Raw materials & packaging materials

- a) The copra should be stored in prescribed silos (huge storage tank) and packaging materials in appropriate dry and ventilated areas for effective protection from dust, condensation, drains, waste and other sources of contamination during storage. Packaging material storage room for storing of Laminates, PET bottles and Jars etc should be closed from all sides to restrict entry of flies, rodents, birds, insects/pests etc.
- b) The packaging material shall be stored on racks/ pallets such that they are stored off the floor on pallets and off the walls to ensure easy and adequate cleaning and prevent harboring of any insects, pests or rodents.
- c) All packaging materials shall be stored in separate areas from stationery, hardware and cleaning materials.
- d) The storage of copra, work-in-progress and finished packed oils shall be subjected to FIFO (First in First out), FEFO (First expire First out).
- e) All non-confirming rework / rejected / recalled stocks need to be stored separately with proper labelling.
- f) Copra Silos /crude oils tank should be hygienic in design & should be properly sealed covered either with a proper fitting cover/lid to protect the oil completely from dust, dirt and flies and other insects or any kind of contamination. They should not be rusted and in case of mild steel or other alloy tanks, tanks surfaces should be coated with food grade coating or inert coating

- g) Proper labelling of the storage tanks of crude oils/ in process oils should be done to avoid cross contamination of different types of oils, if different types are used.

5.1.9 Processing (Oil extraction) including pre-processing

- a) Oil extraction operation's flow diagram and standard operating procedures shall be documented, implemented and for should be displayed at particular operations site.
- b) Temperature of copra should be between 45°C to 55°C while on entering into the oil extraction machine. The temperature should be achieved and maintained using a hot air blower into the conveyer belt to the oil extraction machine.
- c) Avoid charring of copra which affects the aroma of the complete batch of oil.
- d) Intermediate in-process samples should be taken and tested for critical parameters and test results records should be maintained.
- e) Personnel should be required to put on clean protective clothing including footwear and wash their hands before entering to the production area.
- f) Cleaning schedule for machineries and equipment in the production area should be maintained to ensure entire operations are carried out in hygienic conditions.
- g) Systems shall be in place to prevent contamination of oil by foreign bodies such as glass, metal shards from machinery and dust. In manufacturing and processing, suitable detection or screening devices should be used where necessary.
- h) Procedures should be in place to be followed by workers in the case of breakage.
- i) Access to processing area by outsiders should be restricted or controlled. Where risks are particularly high, access to processing areas shall be only via a changing facility.

5.1.10 Quality Control

Marico have a quality control program in place to include inspection and testing of incoming oil, in process and finished coconut oil. The quality check is designated to the in-house sophisticated state-of-art analytical and testing laboratory, which is certified by NABL (National Accreditation Board for Testing & Calibration Laboratories). The quality control policies that Marico follows are:

- a) Trained and competent testing personnel should be available for food testing.
- b) All incoming crude coconut oil's test records or COA shall be maintained. Defined adulteration tests under FSS regulations standards should be performed with each lot.

- c) In-process and finished product samples should be tested and records should be maintained. It is recommended to retain the control samples, till the end of shelf life. Further, it should be disposed off.
- d) Calibration of laboratory equipment shall be done periodically.

Table 8 : Acceptable finished good specifications

Name of tests/ Criteria	Values
Butyro-refractometer (reading at 40°C.) OR Refractive Index (reading at 40°C)	34.0 to 35.5 1.4481-1.4491
Saponification value	Not less than 250
Iodine value	7.52 to 10
Polenske Value	Not less than 13
Unsaponifiable matter.	Not more than 0.8 per cent
Acid value	Not more than 1.2.
Test for Argemone oil	shall be negative.
Test for Cotton seed oil	shall be negative.
Test for Lin seed oil	shall be negative.
Test for Kusum oil	shall be negative.
Test for Castor oil	shall be negative.
Test for Mineral oil	shall be negative.
Aroma Test	R0-S2C2
Colour Test (Tintometer Test)	3.2 in Tintometer
Clarity (Nessler's Tube)	Not less than 4

5.1.11 Finished Goods Packaging

- a) The packaging design and materials shall provide protection to products in order to prevent contamination, damage and accommodate required labelling as laid down under the FSS Act & Regulations there under. Only Food grade packaging materials shall be used. Packaging materials like aluminium, tin and plastic shall conform to BIS standards as mentioned under the FSS Regulations.
- b) The finished goods packaging materials shall be inspected before use to prevent using damaged, defective or contaminated packaging, which may lead to contamination of the product. Procedures in place to confirm that contaminated, damaged or defective reusable containers are properly cleaned and sanitized, repaired or replaced, as appropriate, before re-use should be strictly followed.

- c) Packaging section shall always be considered high care zone and access to packaging section shall be restricted and controlled via changing facility. Personnel need to be required to put on clean protective clothing and footwear before entry .
- j) Filling and packaging shall be under hygienic environment in a separate designated area that should be closed from all sides to restrict entry of flies, rodents, birds and pests.
- e) To prevent any physical hazard, there should a 1 or 5 micron filter installed before packing or bulk loading of oils.
- f) All packaging equipment like weighing scale shall be calibrated on daily basis against certified standards & their records should be maintained.

5.1.12 Maintenance

- a) Preventive maintenance of equipment and machinery shall be carried out regularly as per the instructions of the manufacturer.
- b) A preventive maintenance program must include all devices used to monitor and/or control food safety hazards and cover the maintenance procedure, frequency and identification of the person (and/ or external agency) responsible for maintenance activity.
- c) Internal & External calibration schedule for critical food safety equipment's should be maintained.
- d) Corrective maintenance shall be carried out in such a way that production on adjoining lines or equipment is not at risk of contamination and post maintenance verification to be get verified.
- e) Temporary fixes when used shall not put product safety at risk and should be removed / permanently fixed in a timely manner.
- f) Lubricants, heat transfer fluids or any other similar material used shall be food grade where there is a risk of direct or indirect contact with the product.
- g) It is recommended as best practice to maintain plant equipment's breakdown records.
- h) Loose items control policy (Nut & bolts , Nails broken pieces or smaller parts of machines) should be followed to prevent any contamination with product or packaging material .

5.1.13 Warehousing of final oil product

- a) While warehousing, all packed finished goods should be stored 18 inch away from walls preferably stocks to be kept on pellets and should not be get stored directly on floor.

- b) The warehouses should be kept clean, ventilated and under hygienic condition to avoid pest infestation, dirt, dust, smell.
- c) Regular inspections should be done by the designated staff for identifying any kind of leakages or any other damages on the finished goods.
- d) All finished goods should be warehoused for at least 48 hours before dispatching for inspection.

5.1.14 Transportation

- a) Conveyances and/or containers or tankers used for transporting oils shall be kept clean and maintained in good condition. Where direct contact with oils can occur such as during bulk transportation, the materials used in carrier construction should be suitable for food contact.
- b) Vehicles of only FSSAI registered transporters shall be used for bulk transportation of coconut oil.
- c) The dispatches of finished goods must follow FIFO or FEFO (First Expiry First Out) system.
- d) Tankers/containers / rail wagons/ trucks used to transport crude coconut oils / packed products shall be inspected for proper servicing & cleaning based on the risk evaluation of previous cargo & next product cargo loading. The documents of the vehicle inspection checklist should be maintained.
- e) For bulk transportation of oils, the tankers / containers / rail wagons shall be reserved for that purpose only and such containers shall be marked in a clearly visible and indelible manner to show that they are used for transporting of oils only. These shall not be used for transporting chemicals or petroleum products.
- f) All coconut oils transportation in tankers / containers / wagons shall be carried out under intact unbreakable sealed conditions. It is preferable that seals have marking or numbers to avoid any chances cross contamination or sabotage.
- g) The mode of transportation shall be under the reduced amount of air contact and with reduced temperature, as both accelerate the rate of oxidation.
- h) To minimize the food spoilage during transportation, all critical links should be identified and taken care of.
 - If the vehicle is open from the top and/or sides, cover the transport vehicle from all the sides with preferably a water proof material like tarpaulin sheet to protect the finished goods.

- Cushion the vehicles with dry grass before loading the retail packages to avoid physical damage which can cause leakage during transportation and distribution.

5.1.14.1 Loading and Unloading

Loading and unloading is one of the major thing in the transportation section. And they have some prescribed guidelines for doing it in the best way. They are:

- a) Before the transfer of oils in storage tanks, shore tanks, ship tanks and road or rail tanks; the oils should be brought to transfer temperature by slow heating, so that the liquid is completely homogeneous.
- b) As best practice; heating should not exceed the maximum rate of 5°C over a 24 hour period and if steam is used, the steam pressure should not exceed 150 kPa (1.5 bars) gauge, to prevent localized over-heating.
- c) The temperature is chosen according to oil grade and also to minimize damage to the oil.
- d) If the oils become solid during storage, extreme care should be taken during initial heating, ensuring no overheating.
- e) Temperature at loading and unloading should refer to the average of top, middle and bottom temperature readings. Readings should be taken not less than 30 cms away from the heating coils.
- f) Different oil grades/types should be kept separate.
- g) Pumping 'new' oil into 'old' oil should be avoided for oxidative quality reasons.
- h) The first few pumping of each grade should be collected where possible in a separate tank for quality checks.

5.1.15 Rework & control of non-conforming products

- a) All rework material shall be labeled, stored, handled and used in such a way that product safety, quality, traceability and regulatory compliance are maintained. All traceability records for rework shall be maintained.
- b) Stored rework material shall be protected from exposure to microbiological, chemical or extraneous matter contamination.
- c) Where ever rework activities involves product decantation from filled packages adequate controls shall be put in place to ensure removal and segregation of packaging materials and to avoid contamination of the product with extraneous matter.

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- d) Standard operating procedure should be defined and documented for handling any rework or non-confirming products.

5.1.16 Traceability and recall

- a) Marico have a traceability system for assigning codes or lot numbers to incoming materials, packaging materials and finished products, etc. This will help to identify products backward & forward complete traceability.
- b) Marico have a documented and effective product recall plan in place in accordance with the Food Safety & Standards Recall Regulations, 2017. Such a plan shall allow Marico to effectively locate all affected food products that may cause a potential threat to public health and enable the complete, rapid recall of the implicated lot of the product from the market.
- c) Where a product has been recalled because of an immediate health hazard, other products which are produced under similar conditions which may also present a hazard to public health shall be evaluated for safety and may need to be recalled
- d) Recalled products shall be held under supervision until they are destroyed, used for purposes other than human consumption, determined to be safe for human consumption, or reprocessed/reworked in a manner to ensure their safety.

5.1.17 Consumer awareness and Complaint handling

- a) Information shall be presented to consumers in such a way so as to enable them to understand its importance and make informed choices. Information may be provided by labelling or other means, such as company websites, education programmes and advertisements, and may include storage, preparation and serving instructions applicable to the product.
- b) There should have a system to handle product complaints with identified person or people responsible for receiving, evaluating, categorizing, investigating and addressing complaints. Complaints shall be accurately categorized according to safety concerns and other regulatory concerns, such as labelling and shall be investigated by appropriately-trained technical personnel.

5.1.18 Training and Supervision

- a) Suitable trainings shall be given to all personnel handling food to enable them to have the required knowledge and skills for specific tasks along with personal hygiene requirements

commensurate with their work activities, the nature of food, its handling, processing, preparation, packaging, storage, service and distribution.

- b) These training programs shall be delivered by qualified and trained personnel. Records of training shall be kept.
- c) Periodic assessments of the effectiveness of training, instructions programs as well as routine supervision and checks should be made to ensure that food hygiene and food safety procedures are being implemented correctly and effectively by all personnel.
- d) Training programs shall be routinely reviewed and updated wherever necessary. Systems should be in place to ensure that food handlers remain aware of all procedures necessary to maintain the safety and suitability of food.

5.1.19 Documentation and records

- a) Appropriate documentation & records of processing, production and distributions shall be maintained in a legible manner, retained in good condition for a period of one year or the shelf-life of the product, whichever is more.
- b) Following records shall be maintained :
 - Incoming materials checks – raw materials, ingredients, packaging materials. Etc.
 - Inspection and testing
 - Operational controls such as temperature, pressure, time etc.
 - Product recall and traceability
 - Storage
 - Cleaning and sanitation
 - Pest control
 - Medical examination and health status
 - Training
 - Calibration
 - Complaints and customer feedback
 - Corrective and preventive actions
 - Self-evaluation results

5.2 Implementation level of GMP guidelines by Marico Ltd, Kanjikode

Since GMP is a complex concept, assessing the implementation level of GMP is even more a complex task. For getting more accurate results, the assessment have been done in two different

perspectives. One in the perspective of the employees of Marico ltd, Kanjicode and the other, in the perspective of the researcher.

5.2.1 Implementation level of GMP in the perspective of employees of Marico ltd, Kanjicode

Table 9 reveals the result of Likert 5-point analysis for assessing the implementation level of GMP guidelines in the perspective of employees of Marico ltd, Kanjicode. The assessment was mainly based on 15 crucial parameters which are a gem out of the detailed GMP guidelines. These parameters include various positive statements which are graded in Five-point continuum allotted for the responses.

Out of the 15 statements, 10 statements have the highest level of perception. The lowest level of perception obtained from the responses was the scale “Moderate” and there were only one statement which was marked as moderate level. And this points that, there are barriers in Marico ltd, Kanjicode for manufacturing world class products which the respondents don't want to share with the researcher. The company should identify these barriers and implement programs or strategies to overcome them.

Table 9 : Implementation level of GMP guidelines in the perspective of employees of Marico Ltd, Kanjikode

Statements	SA	A	AS	DA	SD	Score	Index	Level of Perception
The employees in your company are aware of the importance of GMP in the work place.	28	10	2			186	93	High
All employees are trained on the basis of GMP within the company.	19	18	3			176	88	High
The implementation of GMP will benefit the company positively.	36	4				196	98	High
There are training programs in place that will help your company to achieve world class manufacturer practices.	4	15	9	7	5	126	63	Good
There are no barriers in your company that prevent you from achieving production of world-class products.	2	12	13	9	4	119	59.5	Moderate
There is an established communication channel put in place to ensure general awareness of GMP principles in your company.	9	20	11			158	79	Good
Employees in your company are allowed to contribute ideas that might affect the food safety system positively for continuous improvement.	16	24				176	88	High
Non-conforming products are investigated with root cause analysis by the concerned department.	8	26	6			162	81	High
Corrective actions are closely monitored and followed up to prevent the recurrence of the same issues in future.	22	15	3			179	89.5	High
Improvement tools are used by the company to solve quality problems.	11	19	7	3		158	79	Good
You often rely on quality tools to solve quality problems.	9	17	9	4	1	149	74.5	Good
You have been trained in the use of basic quality control tools.	29	4	2	5		177	88.5	High
GMP aids or helps cleanliness in the company and premises.	33	7				193	96.5	High
The monitoring of GMP is seen as an additional responsibility.	21	12	7			174	87	High
Audits are conducted to verify the effectiveness of GMP system in your company.	15	19	6			169	84.5	High
Overall Implementation level							83.3	High

SA - Strongly Agree A - Agree AS - Agree to Some extent DA - Disagree SD - Strongly Disagree

In the perspective of employees of the company, it is very much clear that company have succeeded in passing the benefits that is achieved while implementing GMP in the production plant. And also, it is clear that the company's intention of familiarizing the GMP among the employees through training and other programs have been succeeded. The level of disagreement of employees towards the given statements was very low, which is a positive aspect for a manufacturing unit.

In a Likert 5- point scale analysis, achieving an overall index of 83.3 is very rare. Marico Ltd, Kanjikode have succeeded in achieving that in the assessment of their GMP guidelines. Which clearly says that the implementation level of GMP in Marico Ltd, Kanjikode is High in the perspective of the employees of the same.

5.2.2 Implementation level of GMP in researcher's evaluation

The researcher has taken care and time to evaluate the GMP aspects of the company. It is very much important to find out whether the actual good manufacturing practices complies with the company's prescribed procedures. The evaluation has been done in two parts. First part deals with the personnel and their hygiene factors. And the second part consists of the other crucial GMP guidelines.

5.2.2.1 Personnel and their personal hygiene evaluation

This has been done by observing the employees and their actions / behaviour inside the plant . Since there is a chance for faking, this evaluation was done without the concern of the employees. The researcher had taken five employees each from three departments (Raw Material Store, Production and Filling / Packaging), which are the most crucial departments in the food industry for this study, and evaluated them by giving scores (maximum score 10) to fifteen predefined criteria.

Table 10 shows the detailed results of the personnel and their personal hygiene evaluation. From the table it is very clear that the overall compliance of personal hygiene is Excellent by obtaining a total of 95.6 percent in evaluation. This shows that the personal hygiene of employees of Marico Ltd, Kanjikode is excellent and they adhere to the standards very much. However, if we look in to the table carefully, there are some interesting findings. While all criteria got above 90 per cent score, only two got below 90 per cent. And they are the 'presence of jewelry and electronic gadgets' and 'handwashing and drying'. It is noted that almost everyone carries their mobile phone with them in the premises. That is why none of the 15 employee got maximum score in this

criterion. It is also noted that most of the employees have any kind of jewelry with them (majority wedding ring and chains). Usage of protective apparels is the another area where the company should take care of. Employees or Raw Material Store Dept. are supposed to wear safety helmets always. However, it is noted that the usage of safety helmets in this department is very low when compared to the other departments in the company. In case of hand washing and drying, the employees in Filling / Packaging Dept. was the only one who did it in the prescribed occasions.

It should be very much appreciated that the employees of all department strictly follows company's 'No Smoking, No Eating, No Chewing' policy in the company. It is also appreciated that, no employees are found to have any kind of illness or injuries in the company. The other positive finding in the study is that the employees of Production Dept. are seen very much compliant in the personal hygiene factors.

Table 10 : Personal hygiene evaluation report of employees

SL NO	Evaluation Criteria	Raw Material Store Dept.						Production Dept.						Filling/ Packaging Dept.					SUM	%						
		EMP 1	EMP 2	EMP 3	EMP 4	EMP 5	EMP 6	EMP 7	EMP 8	EMP 9	EMP 10	EMP 11	EMP 12	EMP 13	EMP 14	EMP 15										
1	Neat uniform	10	10	9	9	9	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	144	96	
2	Clean and trimmed fingernails	10	10	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	147	98	
3	Facial hairs	10	9	10	10	8	10	10	10	9	10	10	10	10	9	10	8	10	10	10	10	10	10	140	93.3	
4	Protective apparels	8	8	7	8	8	10	10	10	10	10	10	10	9	10	10	10	10	10	10	10	10	10	136	90.7	
5	Eating, Smoking and Chewing	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	150	100	
6	Presence of jewelry or any other electronic gadgets	9	8	8	8	9	9	9	9	9	9	9	9	8	8	8	7	9	9	9	9	9	9	128	85.3	
7	Handwashing and drying	9	8	8	9	9	9	8	8	9	9	9	9	7	9	10	10	10	10	10	10	10	10	132	88	
8	Illness and Injuries	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	150	100	
9	Roaming	9	10	9	9	8	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	144	96	
10	Raw Material / Finished Goods Handling	10	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	145	96.7	
11	Machine handling	10	10	10	10	9	10	10	10	10	10	10	10	9	9	10	10	10	10	10	10	10	10	147	98	
12	Waste disposal	9	10	10	10	10	10	10	10	10	10	9	9	10	10	9	9	9	9	9	10	9	9	142	94.7	
13	Meeting visitors	10	10	10	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	149	99.3	
14	Adherence to SOP	10	9	9	10	10	10	10	10	10	10	10	10	10	9	10	10	10	10	10	10	10	9	146	97.3	
15	Issues reporting to authority	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	150	100	
Total Compliance																									95.6	
Average Score of an employee																									143	

5.2.2.2 Overall GMP guidelines evaluation

This evaluation has been done by completing FSSAI prescribed audit scorecard. Observing the manufacturing plant, premises, employees, their actions / behaviour inside the plant, different procedures of plant etc provided the data for assigning respective scores. Data from the employees are collected through casual talks rather than typical interviews to avoid faking in the data. The below table shows the detailed results of the evaluation.

Table 11 : GMP guidelines evaluation report

Sl. No.	Statements	Max Score	Obtained Score
1*	<i>The company has an updated FSSAI license and is displayed at a prominent location.</i>	4	4
I	Design & Facilities		
2	The design of plant premises provides adequate working space, permit maintenance & cleaning to prevent the entry of dirt, dust & pests.	2	2
3	The internal structure & fittings are made of non-toxic and impermeable material.	2	2
4	Walls, ceilings & doors are free from flaking paint or plaster, condensation & shedding particles.	2	2
5	Floors are non-slippery & sloped appropriately.	2	2
6	Windows are kept closed & fitted with insect proof screen when opening to an external environment.	2	2
7	Doors are close fitted to avoid entry of pests.	2	2
8*	<i>Equipment and containers are made of non-toxic, impervious, non-corrosive material which is easy to clean & disinfect.</i>	4	4
9	Premise has sufficient lighting.	2	2
10	Adequate ventilation is provided within the premises.	2	2
11	Adequate storage facility for packaging materials, disinfectant chemicals, personal items etc are available.	2	2
12	Personnel hygiene facilities are available. (Adequate number of hand washing facilities, toilets, change rooms, rest & refreshment room etc).	2	2
13	Potable water (meeting standards of IS:10500) is used in contact with packaging materials & tested for quality semi-annually.	2	2

14	Food material is tested through certified laboratory.	2	2
II	Control of operation		
15	Incoming material procured as per internally laid down specification & from an approved vendors.	2	2
16	Raw materials is inspected at the time of receiving.	2	2
17	Incoming material, semi or final products are stored according to their temperature and humidity requirement, in a hygienic environment. FIFO & FEFO is practised.	2	2
18	Requisite time and temperature is being achieved, maintained, monitored & recorded while manufacturing/processing.	2	1
19	Extracted oil is packed in a hygienic manner.	2	2
20*	<i>Packaging materials is food grade & in sound condition.</i>	4	4
21	Cleaning chemicals & other hazardous substance are clearly identified & stored separately from food.	2	2
22	Transporting vehicle are kept clean and maintained in good repair.	2	2
23	Transporting vehicle are capable of meeting requisite temperature.	2	0
24	Recalled products are held under supervision & destroyed or reprocessed/reworked in a manner to ensure their safety.	2	2
III	Maintenance & sanitation		
25	Cleaning of equipment, food premises is done as per cleaning schedule & cleaning programme.	2	2
26	Preventive maintenance of equipment and machinery are carried out regularly as per the instructions of the manufacturer.	2	1
27	Measuring & monitoring devices are calibrated periodically.	2	2
28*	<i>Pest control program is available & pest control activities are carried out by trained and experienced personnel.</i>	4	4

29	No signs of pest activity or infestation in premises (eggs, larvae, faeces etc.)	2	2
30	Drains are designed to meet expected flow loads and equipped with traps to capture contaminants.	2	1
31	Food waste and other refuse are removed periodically from food handling areas to avoid accumulation.	2	2
32	Disposal of sewage and effluents is done in conformity with standards laid down under Environment Protection Act, 1986.	2	1
IV	Personal Hygiene		
33	Annual medical examination & inoculation of food handlers against the enteric group of diseases as per recommended schedule of the vaccine is done.	2	1
34	No person suffering from a disease or illness or with open wounds or burns is involved in handling of food or materials which come in contact with food.	2	2
35*	<i>Food handlers maintain personal cleanliness (clean clothes, trimmed nails & waterproof bandage etc) and personal behaviour (hand washing, no smoking, no spitting etc).</i>	4	4
36	Food handlers equipped with suitable aprons, gloves, headgear, shoe cover etc; wherever necessary.	2	2
V	Training & Complaint Handling		
37	Internal / External audit of the system is done periodically.	2	2
38	Company have an effective consumer complaints redressal mechanism.	2	2
39	Food handlers have the necessary knowledge and skills & trained to handle food safely.	2	2
40	Appropriate documentation & records are available and retained for a period of one year or the shelf-life of the product, whichever is more.	2	2
TOTAL			83

Maximum Score : 90

Asterisk mark () questions may significantly impact food safety & therefore must be addressed as a priority. Failure in any of the asterisk mark (*) questions, will lead to Non-compliance*

The total score of 83 falls under Good category in the evaluation. By analyzing the scorecard, it can be noted that Marico Ltd, Kanjikode have a good compliance with their prescribed good manufacturing practices. Achieving a good compliance in FSSAI prescribed audit scorecard is a tough task and Marico Ltd, Kanjikode have done a great job to make it possible.

Even if there are lot of positive aspects, the company should improve their waste management system. Some flaws or imperfections in the waste management have reduced the score by 2 points, which is very crucial to improve the score category to Excellent in the evaluation. Another area where the company loosed 2 score is regarding the oil transportation (un-packed) vehicle. The oil tanker in which the crude / filtered coconut oil transports to other plant don't have any temperature adjustment feature. The company's justification on this is that, the oil in oil tankers are only transported between the manufacturing plants of the company in Perundurai and Puducherry of Tamil Nadu state, whose temperature is suitable for oil transportation. That's why they are not using specialized oil tankers.

Even if the employees of Marico Ltd, Kanjikode are Excellent in their personal hygiene, the company should have to improve in the area of annual medical examination and inoculation of food handlers to improve the food safety. Since this is food industry, food safety always comes as the primary priority.

5.3 Employee awareness on GMP

Employee awareness on GMP was evaluated by conducting a GMP quiz with the employees of the company. The quiz was constituted with 15 multiple-choice questions. The respondents were the employees of 8 prominent departments which have a direct impact on the food safety of the firm. Namely, Raw Material Store Department, Packing Material Store Department, Production Department, Filling/Packaging Department, Finished Goods Store Department, Human Resource Department, Plant Quality Assurance Department and Quality Check Department. From each department, 5 employees were taken for the study. That means a total of 40 respondents.

The below table shows the overall performance of employees towards each question of the quiz. And for the entire assessment, it have got 88.17 per cent scores which fall under the Good category. It is noted that, 2 out of 15 questions have cent percent points. That means the employees are well aware about why Rodo box, fly catcher, strip curtains and air curtains are used and why

the copra are dried before storing it in the silos. There is only one question that got below 30 point and that is regarding the visitors of the employees.

Table 12 : Employee awareness evaluation report - Overall

SL. NO	Questions (1 Point each)	Correct Answers
1	What is the full form of GMP?	36
2	GMP is _____	33
3	Why GMP ?	34
4	Why sanitizer is used?	37
5	For which reasons you should wash hands?	35
6	If you have a casual personal visitor, what will you do?	29
7	Do you know why foot dip is used?	30
8	When you deal with copra, What Personal Protective Equipment (PPE) should wear?	35
9	What are the reasons why wooden items are not used in Production area?	36
10	What is the importance of PPE like Apron, hairnet, Mask, Helmet and safety belts, gum boots, shoes etc.?	35
11	Do you Know why Rodo box, fly catcher, strip curtains and air curtains are used?	40
12	What will be your approach, When you find above rodents in production area?	37
13	Do you know why drying of copra is done?	40
14	Do you know why 18 inch distance between pallets from wall is maintained?	35
15	Which of the following is NOT a reason for conducting quality audits?	37
Total		529
Percentage		88.17%

The below figure illustrates more precise idea regarding points obtained by each questions. If we analyse this we can see that all questions have got above 70 per cent points which is a positive thing. It should be also noted that, there are 7 questions which have got 90 per cent or above points.

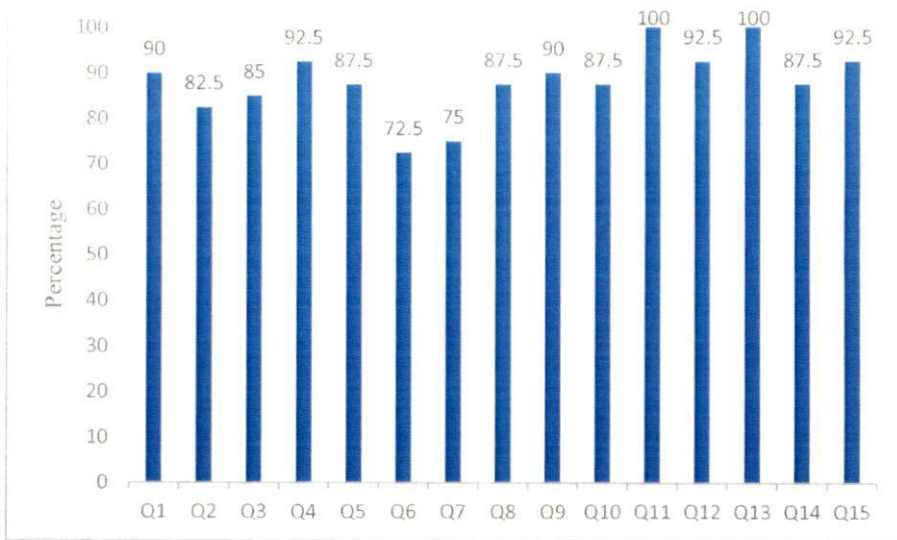


Figure 6 : Employee awareness evaluation results

Figure 7 shows the data / result individually. It is found that 4 employees have got cent per cent marks. And one interesting thing is that, there is an employee from Production Department among them. The fact which make that an interesting thing is, the average educational qualification of production department employees are school level. The majority employees falls under the category of 13 points with 16 employees and the next is 14 points with 11 employees. There is no one who scored below 11 points. Figure 8 shows the percentage distribution of the same.

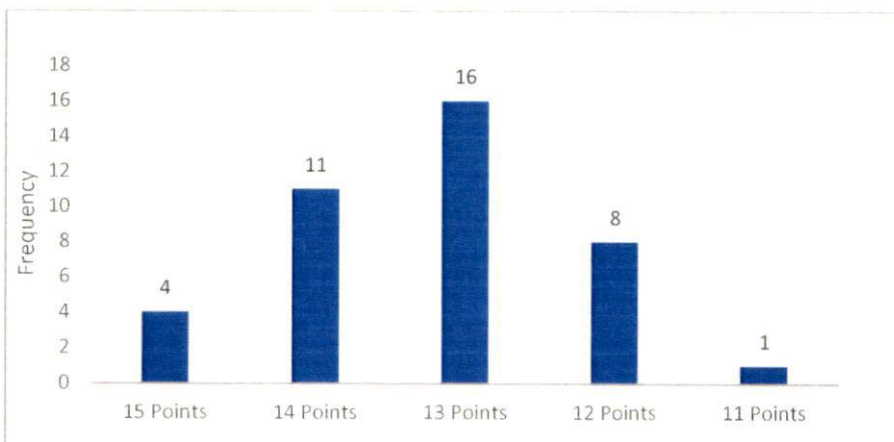


Figure 7 : Frequency distribution of points

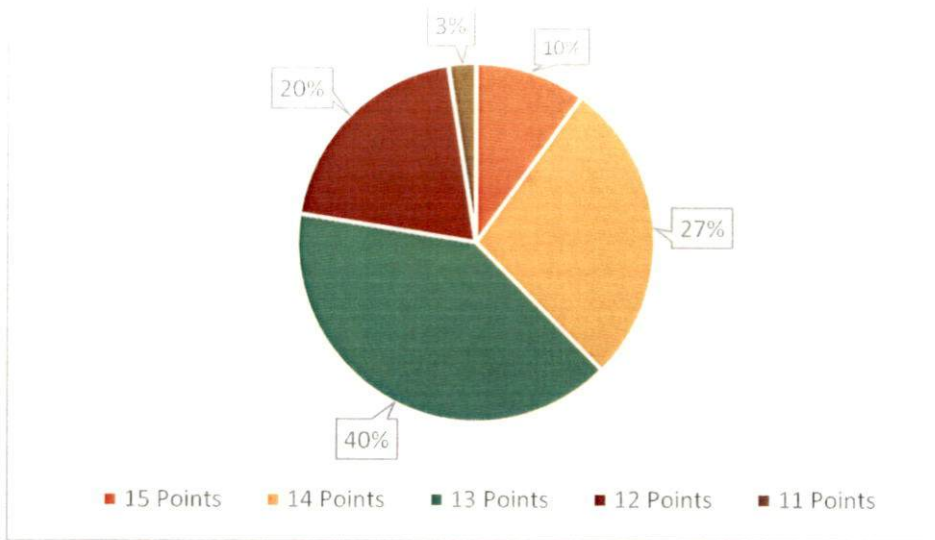


Figure 8 : Percentage distribution of points

Figure 9 shows the department wise analysis of the GMP awareness quiz. It is evident that the Quality Check Department, Plant Quality Assurance Department and Production Department comes as the top 3 performers in the quiz with total points of 71 and 70 respectively, where 75 is the maximum points. And the least performed department is Finished Goods Store Department.



Figure 9 : Department wise representation of employee awareness

Table 13 : Employee awareness evaluation report - Department wise

QUESTIONS (1 Point each)	DEPARTMENTS							
	RM	PM	PRO	FILL	FG	HR	PQA	QC
What is the full form of GMP?	5	3	5	4	4	5	5	5
GMP is _____	4	3	4	4	3	5	5	5
Why GMP ?	4	4	4	4	3	5	5	5
Why sanitizer is used?	5	5	5	3	4	5	5	5
For which reasons you should wash hands?	5	4	5	3	3	5	5	5
If you have a casual personal visitor, what will you do?	3	4	5	5	4	1	2	5
Do you know why foot dip is used?	4	4	5	4	2	3	4	4
When you deal with copra, What Personal Protective Equipment (PPE) should wear?	4	4	5	3	5	5	4	5
What are the reasons why wooden items are not used in Production area?	5	3	4	5	5	4	5	5
What is the importance of PPE like Apron, hairnet, Mask, Helmet and safety belts, gum boots, shoes etc.?	4	4	5	4	5	4	5	4
Do you Know why Rodo box, fly catcher, strip curtains and air curtains are used?	5	5	5	5	5	5	5	5
What will be your approach, When you find above rodents in production area?	4	4	5	5	4	5	5	5
Do you know why drying of copra is done?	5	5	5	5	5	5	5	5
Do you know why 18 inch distance between pallets from wall is maintained?	4	5	4	4	5	5	5	3
Which of the following is NOT a reason for conducting quality audits?	5	5	4	4	4	5	5	5
Total Points	66	62	70	62	61	67	70	71

Table 13 shows department wise performance regarding each questions of the questionnaire. From the table it can be inferred that, Finished Goods Store Department, Packing Material Store Department and Filling / Packaging Department are the three least performed Departments. They got 61 points, 62 points and 62 points respectively. All the other five departments have better results compared to this three departments. Among the 8 departments, the Quality Check Department have the top score of 71 points.

If the data are closely analyzed, it have been found that, the employees of the HR department have the least awareness regarding the casual visitors at the plant. The case of Plant Quality Assurance department is also similar. They should definitely improve their awareness regarding the same. The another area where the awareness is lacking is the Finished Goods Store department regarding the usage of foot dip. It is inferred that the usage of foot dip by this department should be also low. Figure 10 illustrates the department wise point distribution graphically.

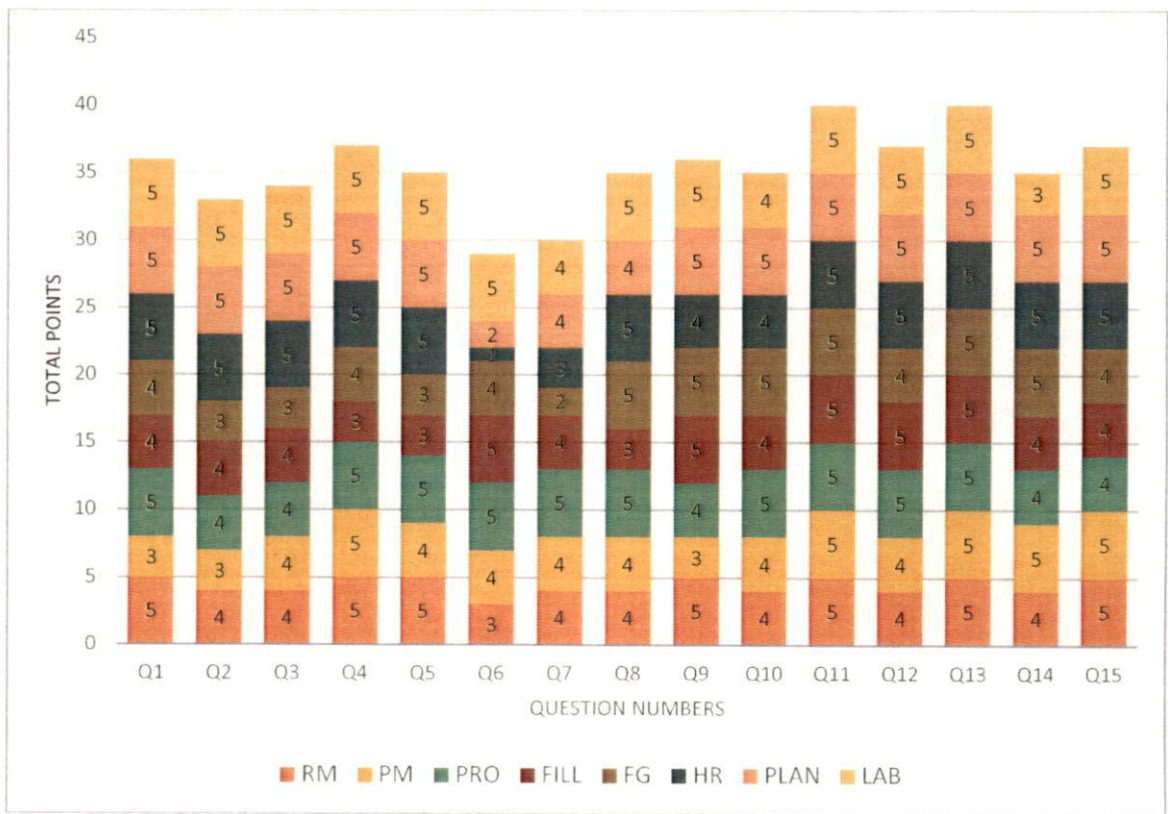


Figure 10 : Department wise point distribution for each questions of the questionnaire

Chapter VI
***SUMMARY OF FINDINGS,
CONCLUSIONS AND SUGGESTIONS***

Chapter - VI

SUMMARY OF FINDINGS, CONCLUSIONS AND SUGGESTIONS

Marico Ltd is not only India's but also world's largest coconut procuring company. This research work entitled "A Study On The Good Manufacturing Practices Followed By Marico Ltd, Kanjikode" aims to throw some light on the GMP aspects followed by Marico Ltd, Kanjikode, where the majority of the India's most selling coconut oil Parachute is manufacturing. The study was conducted using 3 objectives which collectively satisfy the study. And the objectives are:

- To examine the Good Manufacturing Practices adopted by Marico Ltd, Kanjikode for producing Coconut Oil.
- To assess the implementation level of GMP in Marico Ltd, Kanjikode
- To evaluate the employee awareness on GMP in Marico Ltd, Kanjikode

The respondents for the study was selected using stratified random sampling technique. There were 40 respondents considered for the study. The different departments of the company was considered as different strata and from each of the strata 5 employees was randomly selected.

6.1 Findings

Findings of the study are categorized under the different objectives, which the study have covered.

6.1.1 Findings on the Good Manufacturing Practices followed by Marico Ltd, Kanjikode

The company have been following all relevant internationally accepted GMP guidelines in the production plant. Some of the major GMP guidelines that Marico follows are:

1. Location and Surroundings:

The manufacturing plant should be located away from flood prone area.

- The plant was zero affected in the 2018 Kerala flood even if the Malampuzha dam, Palakkad is with in a 10 km radius.

2. Premises and rooms:

The plant layout should have a proper space for inward and outward vehicle movement.

- The plant follows one-way policy for vehicles inside the compound so that no two vehicles comes head on head.

3. Equipment, Containers and Food contact surfaces:

Equipment and containers that come in direct contact with oil should be impervious, corrosion free and should be inert to oil.

- Stainless steel cylindrical silos with conical bottom is used for storage of extracted coconut oil.

4. Personnel

All personnel should wear a neat and tidy uniform with proper PPEs

- The company is providing an in-house laundry facility for the workers inside production area and oil filling area.
- The company reminds about the usage of PPEs by placing posters and symbols on appropriate areas.

5. Receiving raw materials

All raw materials consignment should be inspected before processing.

- Company have a small lab facility (apart from the main QC lab) nearby the raw material receiving area. If a consignment arrives, a random sample is collected and tested before unloading the whole consignment.

6. Processing (Oil extraction)

Avoid charring of copra, which affects the aroma of the complete batch of oil.

- Marico only extracts 95 percent of oil from the copra in order to avoid burnt aroma of the oil.

7. Quality Control

In-process and finished product samples should be tested and records should be maintained.

- Company runs an in-house multispecialty laboratory which is accredited by NABL.

8. Warehousing

All packed finished goods should be inspected.

- The retail packages are kept in observation as batches for at least 48 hours for identifying any kind of leakage or any other irregularity in packing.

6.1.2 Findings on the implementation level of GMP in Marico Ltd, Kanjikode

In the perspective of employees:

The Likert 5-point scale analysis shows that the perception of employees towards the implementation level of GMP in Marico Ltd, Kanjikode is High. The other findings regarding the study are:

1. The training activities regarding the GMP is carried out in an effective manner.
2. Almost all of the employees are aware about the benefits regarding the implementation of GMP in the firm.
3. The non-conforming products while on production are always investigated for the root cause in order to avoid the same issues in future.
4. The corrective actions taken by the company on any non-conformity or any other issues are closely observed for ensuring that the actions taken are in the right direction.
5. It is also found that the company welcomes valuable suggestions from the employees for improving food safety or quality.
6. In the employees perception, there are some barriers present in the company to achieve the production of world-class products in the firm.

In the evaluation of researcher:

The evaluation results regarding the compliance of personal hygiene of employees falls to the category Excellent with 95.6 percent scores. That means that the employees of Marico Ltd, Kanjikode are strictly following the personal hygiene guidelines by the company. Some other findings regarding the same are:

1. The employees of all department strictly follows company's 'No Smoking, No Eating, No Chewing' policy in the company.
2. No employees are found to have any kind of illness or injuries in the company.
3. The employees of Production Dept. are seen most compliant in the personal hygiene factors.
4. Employees of Raw Material Store Department are least compliant to the usage of PPEs (Personal Protective Equipment).
5. All of the employees have at least one kind of jewelry or electronic gadgets including mobile phones with them.
6. The frequency and procedures of hand washing of employees should be improved.

The evaluation results regarding the overall GMP compliance falls under category Good with 83 scores. The other findings are:

1. The GMP component 'Design & facility' and 'Training & Complaint Handling' got full scores in the evaluation.
2. Company should upgrade their vehicle for transporting crude coconut oil to the one which can control the temperature of transporting coconut oil.
3. The waste management system of Marico Ltd, Kanjikode needs some improvement.
4. Even if the employees of Marico Ltd, Kanjikode are Excellent in their personal hygiene, the company should have to improve in the area of annual medical examination and inoculation of food handlers to improve the food safety

6.1.3 Findings on the employee awareness on GMP in Marico Ltd, Kanjikode

The overall evaluation results regarding the employee awareness on GMP falls under the category Good with 88.17 percent scores. The other findings are:

1. The employees are well aware about why Rodo box, fly catcher, strip curtains and air curtains are used and why the copra are dried before storing it in the silos
2. All questions have got above 70 per cent points
3. Four employees have got cent percent scores.
4. Average score for an employee is 13
5. The Quality Check Department, Plan Quality Assurance Department and Production Department comes as the top 3 performers in the assessment.
6. The least performed department in the assessment is Finished Goods Store Department.
7. The employees of the HR department have the least awareness regarding the casual visitors at the plant.
8. Plant Quality Assurance department should also improve their awareness regarding casual visitors.
9. The Finished Goods Store department have the least awareness regarding the usage of foot dip.

6.2 Conclusions

India's income from food industry has increased rapidly over the years. Marico Ltd, a giant in Indian food industry have assumed a place of pride in the national economy. Marico Ltd is the largest coconut oil producing company in the world. Company's quality policies plays a vital role in bringing them up.

From observing the results of the objectives, it is clear that, the perception of employees towards the implementation level of GMP in Marico Ltd, Kanjikode is High, the evaluation results regarding the compliance of personal hygiene of employees are Excellent, the evaluation results regarding the overall GMP compliance is Good and the employee awareness on GMP is also Good. These results of the objectives of the study depicts that, the company have stringent GMPs and also the company have a High compliance with that standards. Nowhere in the study have identified any hazardous potential threats that affect the quality of the coconut oil produced in the plant.

So it can be wholly concluded that the coconut oil which comes out from Marico Ltd, Kanjikode is produced under hygienic conditions by following hygienic procedures and have passed a series of stringent quality check criteria. Thus the coconut oil is very much safe for human consumption.

6.3 Suggestions

On the basis of conclusions arrived the following suggestions are placed to the management of Marico Ltd, Kanjikode so as to improve the GMP and the company as a whole.

1. Company should extend the laundry services to all employees in order to improve the hygiene of the uniform worn by the employees to the maximum.
2. It will be better if company can implement an air filtration system inside the plant which provides clean and pure filtered air to the hot air blowers for drying the copra, which will add to the quality aspects of the extracted oil.
3. Implement camera surveillance near hand washing area. This will forces the employees to follow the proper handwashing procedures.
4. Company should provide personal locker system for all employees for keeping their jewelries and electronic gadgets in it during the office time.

5. Company should consider about providing a monthly quota of coconut oil to all employees from the plant itself. Since everyone has to use the same product, their commitment will increase so as the food quality.

A suggestion to the company as a whole:

Nowadays consumers are more health conscious. Their primary priority will be quality of products. They research about products in the markets and are keen to choose quality products. Due to this reason, many companies are faking their quality specifications for attaining market shares. Even if Marico Ltd is the leader in coconut oil market, the competitions are getting tight nowadays. If the company can effectively market or advertise the GMP element among the consumers, it will certainly catch up some more market shares. Gone are those days, when GMP is considered as a confidential matter, nowadays it should be marketed as a quality element.

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APPENDIX

INTERVIEW SCHEDULE

Quality Management		(Put ✓ for YES and ✗ for NO)
1	Does your company hold a license/registration for the manufacture of edible oil by any quality certification body?	<input type="checkbox"/>
2	Does the company have personnel specifically responsible for quality (e.g. Quality Control / Quality Assurance Manager)? – If Yes, are the authority and responsibilities of these personnel clearly defined?	<input type="checkbox"/> <input type="checkbox"/>
3	Do these personnel have the authority to make independent decisions on product quality?	<input type="checkbox"/>
4	Is there documented evidence for all lots (batches) of product that demonstrates that all steps during manufacture are being carried out as per the defined procedures and that the quantity and quality produced are as expected?	<input type="checkbox"/>
5	Are reference samples retained of: ○ Starting materials? ○ Finished products in the final pack?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6	Are there procedures in place to ensure the traceability of all raw material, intermediate and finished product?	<input type="checkbox"/>
7	Do the traceability records allow for rapid identification of: ○ The suppliers of the raw materials ○ The complete manufacturing history of a lot of finished product	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8	Is there a Supplier Quality Assurance procedure in place, laying down the criteria for selection, approval, review and ongoing approval, to ensure that the supplied products and services meet the expected requirements?	<input type="checkbox"/>
9	Do the Quality Assurance procedures of suppliers of raw and packaging materials monitored?	<input type="checkbox"/>

10	Is there a system in place allowing rapid feedback to the purchasing department if concerns are raised on the quality of purchased materials?	<input type="checkbox"/>
11	Is there a system in place allowing rapid feedback to the manufacturing department regarding modifications or corrective actions to be taken, if required?	<input type="checkbox"/>
12	Are summaries of quality performance data and advice (where relevant) regularly given to manufacturing personnel?	<input type="checkbox"/>
13	Is there a system in place to ensure changes to relevant legislation are promptly noted and applied where applicable?	<input type="checkbox"/>
Personnel and Training		
a	Training	
1	Is 'on the job' training given to personnel?	<input type="checkbox"/>
2	Are new employees given an induction course? – If Yes, does the course include hygiene training?	<input type="checkbox"/> <input type="checkbox"/>
3	Is additional appropriate regular training offered to personnel?	<input type="checkbox"/>
4	For full time personnel, is their training subjected to formal review and assessment?	<input type="checkbox"/>
5	Are individual training records kept and maintained?	<input type="checkbox"/>
6	Have all relevant personnel who come into contact with raw materials / products, had training in basic food hygiene and hold the associated certification, where relevant?	<input type="checkbox"/>
7	Do office, maintenance and cleaning staff and any contractors who enter the production or storage areas receive food hygiene instructions?	<input type="checkbox"/>
8	Are all employees issued with a Company handbook, which includes hygiene rules?	<input type="checkbox"/>

b	Hygiene	
9	Is appropriate protective clothing provided to employees?	<input type="checkbox"/>
10	Is there a requirement for protective outerwear to be removed when leaving the manufacturing areas?	<input type="checkbox"/>
11	Are pre-employment medical checks carried out?	<input type="checkbox"/>
12	Are all visitors made aware of the Company's hygiene policy?	<input type="checkbox"/>
13	Is there a policy in place to ask visitors or contractors, before they enter any manufacturing areas, whether they have suffered or been in contact with any recent illness that may be a potential contamination risk to products?	<input type="checkbox"/>
14	Is there a reporting procedure for staff suffering from, or who are in close contact with people suffering from, specific medical conditions?	<input type="checkbox"/>
15	Is there a Personal Medication procedure in place?	<input type="checkbox"/>
16	Is there a Return to Work procedure in place following illness or holidays abroad?	<input type="checkbox"/>
17	<p>Are there clear written policies in place:</p> <ul style="list-style-type: none"> ○ On the wearing of wristwatches and jewellery in the manufacturing areas? ○ On items of clothing or jewellery that may be allowed in the manufacturing areas for medical, ethnic or religious reasons? ○ On the wearing of make-up, associated items and perfumed products in the manufacturing areas? ○ On the carrying of loose items (pens, mobile phones etc.) in the manufacturing areas? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
18	Are procedures in place for hand washing?	<input type="checkbox"/>

Premises and Equipment		
a	Premises	
1	Is there a Maintenance Plan that ensures the condition of buildings (both internal and external) and equipment is regularly reviewed and action taken when necessary?	<input type="checkbox"/>
2	Is there an Environmental Hygiene Monitoring programme?	<input type="checkbox"/>
b	Ventilation and lighting	
3	Are manufacturing areas ventilated with a constant supply of appropriately filtered air?	<input type="checkbox"/>
4	Are there shatterproof covers on lights in the following areas: <ul style="list-style-type: none"> ○ Raw material storage area? ○ Manufacturing areas? ○ Finished products storage area? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5	Is there a formal glass and plastic breakage control (Brittle Materials) procedure?	<input type="checkbox"/>
c	Floors, walls and ceilings	
6	Are the floors in the manufacturing areas made of an impervious and non-absorbent material?	<input type="checkbox"/>
7	Are they free from cracks and joints in areas where product is exposed?	<input type="checkbox"/>
8	Do drains have trapped gullies and proper ventilation?	<input type="checkbox"/>
9	Are any open drainage channels shallow and easy to clean?	<input type="checkbox"/>
10	Are walls intact and free of faults and finished with a smooth impervious and easily cleaned material?	<input type="checkbox"/>
11	Are windows made of toughened glass or toughened plastic?	<input type="checkbox"/>
12	Are there fly screens on windows that open?	<input type="checkbox"/>
13	Do window ledges slope away from the glass at an angle to prevent items being placed on them?	<input type="checkbox"/>
14	Do doors have smooth, non-absorbent, easy to clean and disinfect surfaces?	<input type="checkbox"/>
15	Does the ceiling construction in manufacturing areas prevent the accumulation of dirt / growth of mould / shedding of particles?	<input type="checkbox"/>

d	Cleaning and Waste management	
16	Is there a Site Hygiene Plan? – If Yes, is this plan regularly reviewed?	<input type="checkbox"/> <input type="checkbox"/>
17	Are cleaning products stored in a location that is separate from the processing areas?	<input type="checkbox"/>
18	Is production waste collected in clearly identifiable receptacles for removal to specific collection points outside the buildings?	<input type="checkbox"/>
19	Is production waste removed from the manufacturing areas regularly?	<input type="checkbox"/>
20	Does the disposal of waste comply with legislation on waste, as implemented nationally?	<input type="checkbox"/>
21	Is all waste disposal appropriately documented?	<input type="checkbox"/>
e	Receiving and despatch areas	
23	Do the receiving and despatch areas provide protection from the weather for materials or product in transit?	<input type="checkbox"/>
24	Is there a defined deboxing/debagging area for those materials which arrive in external packaging?	<input type="checkbox"/>
f	Personnel hygiene facilities	
25	Is the rest and refreshment room the only place where eating or drinking is allowed? – If No, please specify other areas where eating or drinking is permitted:	<input type="checkbox"/>
26	Are the following provided: <ul style="list-style-type: none"> ○ Changing facilities segregated from production area? ○ Toilet and hand washing facilities segregated from manufacturing areas? ○ Separate accommodation for clothing and footwear not being worn during working hours? ○ First Aid facilities and an accident book? ○ A rest and refreshment room segregated from production area, for recreation and eating? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
27	Is the whole site designated non-smoking?	<input type="checkbox"/>

g	Pest control	
28	Is Pest Control practiced?	<input type="checkbox"/>
29	Is pest control contracted out? – If No, are there appropriate procedures in place for in-house pest control?	<input type="checkbox"/> <input type="checkbox"/>
30	What steps are taken to protect against the entrance and harbouring of vermin, birds, pests and pets in all buildings on site?	
h	Equipment	
31	Are all surfaces and materials in contact with raw materials and finished product: ○ Inert to the raw materials / product? ○ Microbiologically cleanable, smooth and non-porous? ○ Visible for inspection (or equipment is easily dismantled for inspection)? ○ In compliance with EU Materials and Articles in Contact with Food legislation? ○ Easily dismantled and readily accessible for cleaning?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
32	Are there detailed cleaning procedures in place for all equipment?	<input type="checkbox"/>
33	Is all equipment cleaned and serviced immediately after use?	<input type="checkbox"/>
34	Are fumes from power driven equipment, heaters etc. ventilated away from the manufacturing areas?	<input type="checkbox"/>
35	Are there maintenance procedures in place for all equipment?	<input type="checkbox"/>
36	Is all equipment regularly serviced and calibrated? ○ If Yes, are appropriate records maintained? ○ Are these regularly checked to ensure calibration is up to date and equipment is working accurately?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
37	Are there procedures in place outlining the action to be taken in the event of a recognised malfunction of the inspection and testing equipment?	<input type="checkbox"/>
i	Water Supply	
38	Is the water supply monitored and controlled?	<input type="checkbox"/>

39	Is potable water used for all manufacturing purposes?	<input type="checkbox"/>
40	Is the water that is used for all manufacturing purposes periodically analysed, where required nationally?	<input type="checkbox"/>
41	Where both potable and non-potable water are used on the premises, are the two water supplies clearly identified and kept separate from each other?	<input type="checkbox"/>
42	Is there a water filtering or disinfection systems installed	<input type="checkbox"/>
Product and Process Development		
1	Are checks carried out on all new products to establish whether the ingredients and formulation are suitable, safe and legal for all intended markets?	<input type="checkbox"/>
2	Are the same checks as above carried out when any significant change is proposed e.g. change of raw material or equipment?	<input type="checkbox"/>
3	Is shelf life testing a requirement of the product development programme?	<input type="checkbox"/>
4	Are proposed labels checked to ensure they conform to all relevant labelling legislation?	<input type="checkbox"/>
5	Are all proposed claims checked to ensure they comply with current legislation?	<input type="checkbox"/>
6	For all new or revised products, is the appropriateness and legality of the packaging checked to ensure compliance?	<input type="checkbox"/>
7	Are all new and revised products checked to ensure that the planned methods and procedures are suitable and that consistent quality products can be produced?	<input type="checkbox"/>
Manufacture		
1	Does each product have: <ul style="list-style-type: none"> ○ Defined and authorised Master Manufacturing Instructions? ○ Related Standard Operating Procedures? 	<input type="checkbox"/> <input type="checkbox"/>
2	Are all instructions and operating procedures clear and unambiguous and written in the official working language of the manufacturing facility?	<input type="checkbox"/>
3	Have appropriate trials been undertaken for each product to confirm that the formulation, methods and procedures specified in the Master Manufacturing Instructions: <ul style="list-style-type: none"> ○ Are suitable for factory production? ○ Are capable of consistently yielding products within the Finished Product Specification 	<input type="checkbox"/> <input type="checkbox"/>

4	Are periodic checks undertaken to ensure the Master Manufacturing Instructions are being followed and that they are still applicable and relevant?	<input type="checkbox"/>
5	Have the following been developed and brought to the attention of all relevant personnel: <ul style="list-style-type: none"> ○ Written operating procedures for each piece of equipment / instrument? ○ Written instructions detailing the action to be taken in the event of stoppages, breakdowns or other unexpected events? ○ Formal procedures setting out the action to be taken in the event of foreign body contamination at any stage during the manufacturing process? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
a	Raw materials	
6	Are detailed specifications held for all raw materials?	<input type="checkbox"/>
7	Are internal identification numbers allocated to all raw materials upon delivery?	<input type="checkbox"/>
8	Are the contents of all containers identified?	<input type="checkbox"/>
9	Are raw materials entering the premises quarantined until they appropriately checked and a decision made on their status i.e. whether approved or rejected?	<input type="checkbox"/>
10	Are all raw material lots (batches) tested? If No, specify what proportion are tested?	<input type="checkbox"/>
11	Are Certificates of Analysis (CoA) for raw materials checked to confirm compliance with the specifications? If Yes, are periodic checks undertaken to verify the quality of the supplier's CoAs	<input type="checkbox"/> <input type="checkbox"/>
12	Are stocks of raw materials in the storage areas: <ul style="list-style-type: none"> ○ Inspected regularly? ○ Tested / sampled where appropriate? 	<input type="checkbox"/> <input type="checkbox"/>
13	Are the temperature and humidity for storing raw materials controlled and recorded?	<input type="checkbox"/>
14	Are there procedures in place for issuing raw materials from store?	<input type="checkbox"/>
15	Is correct stock rotation followed when issuing raw materials from store?	<input type="checkbox"/>
16	Is there a procedure in place for the reconciliation of the quantities of raw materials issued against the quantity of product manufactured?	<input type="checkbox"/>

b	Packaging and labelling materials	
17	Are packaging materials certified for food contact use (i.e. in conformance with current legislation on materials and articles in contact with food)?	<input type="checkbox"/>
18	Are all aspects of current national packaging and packaging waste legislation complied with?	<input type="checkbox"/>
19	Is there a procedure in place to ensure that changes in product formulation are reflected in the label copy	<input type="checkbox"/>
20	Are internal reference codes allocated to each delivery or lot/batch of packaging material?	<input type="checkbox"/>
21	Is packaging material entering the premises quarantined until it is appropriately checked and a decision made on its status i.e. whether approved or rejected?	<input type="checkbox"/>
22	Are stocks of packaging materials in store inspected regularly to check their condition?	<input type="checkbox"/>
23	Is stock rotation followed when issuing packaging materials from store?	<input type="checkbox"/>
24	Are all packaging materials inspected immediately before use?	<input type="checkbox"/>
25	Are procedures in place for: <ul style="list-style-type: none"> ○ The issue of packaging materials from store? ○ The return of part-used lots of packaging to store? ○ The re-sealing of part-used boxes of packaging, to prevent foreign body contamination? ○ The reconciliation of all printed packaging component stock from quantity issued, quantity used, wastage and that returned to store? ○ The removal and destruction of superseded packaging or labels? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
c	Processing and Packaging	
26	Are multiple packaging lines (where present) segregated to avoid the risk of cross-contamination?	<input type="checkbox"/>
27	Are the following checks always carried out before the start of any process: <ul style="list-style-type: none"> ○ The name and appropriate reference to the product being processed is clearly displayed on each production line? ○ The production area is clean and free from any items not relevant to the process to be undertaken? ○ The correct materials and documents have been issued? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

	<ul style="list-style-type: none"> ○ The correct machine settings have been made? ○ All plant and equipment is clean and ready for use? 	<input type="checkbox"/> <input type="checkbox"/>
28	Are in-process conditions monitored (e.g. by sensory, instrumental and / or laboratory testing)	<input type="checkbox"/>
29	<p>Are samples analysed:</p> <ul style="list-style-type: none"> ○ During production? ○ After production? <p>If Yes, are these samples tested:</p> <ul style="list-style-type: none"> ○ In-house? ○ Contract Laboratory? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
30	Are intermediate/by-products quarantined until checked and approved by Quality Control?	<input type="checkbox"/>
31	Are packed finished products quarantined until checked and approved by Quality Control?	<input type="checkbox"/>
32	Are there procedures in place for the management of non-conforming products?	<input type="checkbox"/>
d Disposal of waste and effluent		
33	Is the disposal of printed packaging materials, raw materials and reject product appropriately controlled?	<input type="checkbox"/>
34	Is a reconciliation carried out on quantities of materials or product used and/or produced against those being disposed of?	<input type="checkbox"/>
35	Are all waste materials and effluent disposed of by a route appropriate to the class of material?	<input type="checkbox"/>
Recovery or Re-Working of Materials		
1	Is recovered material quarantined until checked by Quality Control and a disposition decision is made?	<input type="checkbox"/>
2	<p>Are there procedures in place for the following to be undertaken on recovered materials:</p> <ul style="list-style-type: none"> ○ Acceptance? ○ Sampling? ○ Tests? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

	<ul style="list-style-type: none"> ○ Treatments? ○ Authorisation or rejection? 	<input type="checkbox"/>
3	Is there a system in place to ensure that contaminated materials or product are not recovered, reworked or re-processed but are destroyed?	<input type="checkbox"/>
4	Are there procedures in place to control the use of recovered or reworked materials?	<input type="checkbox"/>
5	Are validated methods used for re-processing?	<input type="checkbox"/>
6	Are finished products that have been returned from the market assessed and released by Quality Control before consideration is given for re-sale ?	<input type="checkbox"/>
7	Is the recovery, re-working or re-processing of materials or products clearly documented and these records retained for a designated period of time?	<input type="checkbox"/>
Storage		
a	Access to storage areas	
1	Is access to material and product storage areas restricted to those working in these areas and to other authorised persons?	<input type="checkbox"/>
2	Is there a formal list of persons who are authorised to access these areas?	<input type="checkbox"/>
3	Is there a suitable curtain at all entrances and exits of the storage area?	<input type="checkbox"/>
4	If the storage area connects to the manufacturing area, is a buffer area/pass box provided between the two areas?	<input type="checkbox"/>
b	Temperature and lighting	
5	Is temperature mapping and recording carried out in the storage area(s)?	<input type="checkbox"/>
6	Do lighting appliances have shatterproof protective covers?	<input type="checkbox"/>
c	Materials and product storage	
7	Is a stock rotation system followed?	<input type="checkbox"/>
8	Are all aisles in the storage area(s) kept clear?	<input type="checkbox"/>
9	Are pallets regularly checked for structural integrity?	<input type="checkbox"/>
10	Are packed products stored in conditions necessary for safe storage, appropriate to their specifications?	<input type="checkbox"/>

11	Are stored materials and product clearly identifiable, even when stacked	<input type="checkbox"/>
12	Is there a specific quarantine area for material deliveries / product batches awaiting results of testing?	<input type="checkbox"/>
d	Damaged Goods	
13	Is there a specific holding area for damaged goods, awaiting Quality Control inspection?	<input type="checkbox"/>
e	Cleaning and Storage Area	
14	Are the storage facilities periodically inspected: <ul style="list-style-type: none"> ○ For cleanliness? ○ For pest infestation? ○ To identify stock exceeding its shelf life? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
15	Are such inspections documented and any corrective actions noted?	<input type="checkbox"/>
16	Are there procedures in place for cleaning of the storage premises and equipment?	<input type="checkbox"/>
Transport and Distribution		
1	Are vehicle / container interiors inspected: <ul style="list-style-type: none"> ○ Before loading materials / products? ○ On unloading materials / products? 	<input type="checkbox"/> <input type="checkbox"/>
2	Do the inspections include checks for the following: <ul style="list-style-type: none"> ○ Cleanliness? ○ Moisture? ○ Foreign materials? ○ Insect or rodent infestations? ○ Objectionable odours? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3	Are contaminated vehicles and/or containers kept apart from those that are clean?	<input type="checkbox"/>
4	Are security measures in place that:	

	<ul style="list-style-type: none"> ○ Help deter tampering with goods in storage and distribution? ○ Show whether any tampering has occurred? 	<input type="checkbox"/> <input type="checkbox"/>
5	Is there a written procedure to deal with damages occurring to goods during storage and distribution?	<input type="checkbox"/>
6	Are audits carried out on contracted-out transport facilities and procedures, where relevant?	<input type="checkbox"/>
7	Are the relevant personnel informed when particular care is needed to reduce large temperature fluctuations during transport and delivery?	<input type="checkbox"/>
8	Are fire appliances easily accessible and appropriate for use on the materials / products concerned?	<input type="checkbox"/>
9	Are fork lift and other trucks used within the storage areas battery driven or otherwise equipped to prevent fume or fuel contamination?	<input type="checkbox"/>
Documentation		
1	<p>Is there a written procedure covering the complete documentation system?</p> <p>If Yes, does this include procedures for the:</p> <ul style="list-style-type: none"> ○ Issue of documents? ○ Authorisation of documents? ○ Distribution of documents? ○ Periodic review of documents? ○ Revision of documents? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2	<p>Are relevant personnel given appropriate training on how to complete the documents?</p> <p>If Yes, is this training regularly reviewed?</p>	<input type="checkbox"/> <input type="checkbox"/>
3	Are there safeguards in place to restrict the entering of data to authorised persons only?	<input type="checkbox"/>
4	Are any amendments to documentation clearly corrected and authorised?	<input type="checkbox"/>

a	Electronic documentation	
5	Are there safeguards in place to ensure that: <ul style="list-style-type: none"> ○ Data are entered correctly? ○ Sufficient back-ups are made and retained? ○ Unauthorised access is prevented? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6	Are there procedures in place outlining the action to be taken in the event of system failure or breakdown?	<input type="checkbox"/>
7	How often are all safeguards, back-up systems and procedures checked and updated? Half yearly <input type="checkbox"/> Yearly <input type="checkbox"/> When problem arises <input type="checkbox"/> Never <input type="checkbox"/> If not listed, please specify:	
b	Retention of documents	
10	In general, for how long are records retained? 5 year <input type="checkbox"/> 10 year <input type="checkbox"/> Maximum possible <input type="checkbox"/>	
11	Has it been confirmed that this complies with any legal requirements?	<input type="checkbox"/>
12	Are lot (batch) records retained for the shelf life of the product, plus one year?	<input type="checkbox"/>
13	Is personnel data retained in accordance with national laws on such data?	<input type="checkbox"/>
14	Is a Controlled Records List utilised?	<input type="checkbox"/>
15	Are there safeguards in place to protect all documentation (both electronic and paper copy) in the event of a fire?	<input type="checkbox"/>
Complaints procedure, Product Recall and Emergency Procedure		
a	Complaints	
1	Are there procedures in place for handling product-related complaints?	<input type="checkbox"/>
2	Are personnel appropriately trained to ensure that all complaints are recognised, communicated and recorded?	<input type="checkbox"/>

3	Are complaints, when received, assessed and separated into those with no potential health impact and those that may have a health impact?	<input type="checkbox"/>
4	Is the Quality Control Manager kept fully informed and closely consulted on all complaints relating solely to manufacturing issues?	<input type="checkbox"/>
5	Is there a procedure in place for handling complaints specifically related to adverse events? If Yes, is there a designated person who is responsible for implementing and monitoring this procedure?	<input type="checkbox"/> <input type="checkbox"/>
6	Is complaint analysis carried out at periodic intervals?	<input type="checkbox"/>
7	Are summaries of complaints and / or trends sent to key senior personnel?	<input type="checkbox"/>
b	Product withdrawal and recall	
8	Are there procedures in place for: <ul style="list-style-type: none"> ○ Product withdrawal? ○ Product recall? 	<input type="checkbox"/> <input type="checkbox"/>
9	Is there a nominated, responsible person and nominated deputies to co-ordinate recall activities?	<input type="checkbox"/>
10	Has a crisis management team been established?	<input type="checkbox"/>
11	Has the withdrawal/recall system been tested?	<input type="checkbox"/>
12	Are there procedures in place regarding the proper treatment of withdrawn or recalled material or product?	<input type="checkbox"/>
c	Emergency procedure	
13	Are there procedures in place for responding to emergencies?	<input type="checkbox"/>

Laboratory Testing		
1	<p>Is there an in-house company laboratory?</p> <p>If No, please go to Question 203</p> <p>If Yes, is the laboratory accredited?</p> <p>If Yes, please specify:</p> <p>.....</p>	<input type="checkbox"/> <input type="checkbox"/>
2	<p>Is all laboratory equipment and instrumentation regularly serviced and calibrated?</p> <p>If Yes, are appropriate records maintained?</p>	<input type="checkbox"/> <input type="checkbox"/>
3	<p>Are there written operating procedures for each piece of equipment / instrument?</p>	<input type="checkbox"/>
4	<p>Is there adequate storage space for storage of samples at the appropriate temperature?</p>	<input type="checkbox"/>
5	<p>Does your company use a contract laboratory?</p> <p>If Yes, is the laboratory accredited?</p>	<input type="checkbox"/> <input type="checkbox"/>
6	<p>Does the laboratory use appropriate analytical methods?</p>	<input type="checkbox"/>
7	<p>Is the performance of the laboratory monitored and analysed?</p>	<input type="checkbox"/>

GMP Implementation Level Assessment Questionnaire

SL NO	Statements	SA	A	AS	DA	SD
1	The employees in your company are aware of the importance of GMP in the work place.					
2	All employees are trained on the basis of GMP within the company.					
3	The implementation of GMP will benefit the company positively.					
4	There are training programs in place that will help your company to achieve world class manufacturer practices.					
5	There are no barriers in your company that prevent you from achieving production of world-class products.					
6	There is an established communication channel put in place to ensure general awareness of GMP principles in your company.					
7	Employees in your company are allowed to contribute ideas that might affect the food safety system positively for continuous improvement.					
8	Non-conforming products are investigated with root cause analysis by the concerned department.					
9	Corrective actions are closely monitored and followed up to prevent the recurrence of the same issues in future.					
10	Improvement tools are used by the company to solve quality problems.					
11	You often rely on quality tools to solve quality problems.					
12	You have been trained in the use of basic quality control tools.					
13	GMP aids or helps cleanliness in the company and premises.					
14	The monitoring of GMP is seen as an additional responsibility.					
15	Audits are conducted to verify the effectiveness of GMP system in your company.					

SA - Strongly Agree

A – Agree

AS – Agree to Some extent

D – Disagree

SD - Strongly Disagree

Employee Evaluation Card

Personal Profile		
Name		
Department		
Qualification		
SL NO	Evaluation Criteria	Score (Max 10)
1	Neat uniform	
2	Clean and trimmed fingernails	
3	Facial hairs	
4	Protective apparels	
5	Eating, Smoking and Chewing	
6	Presence of jewelry or any other electronic gadgets	
7	Handwashing and drying	
8	Illness and Injuries	
9	Roaming	
10	Raw Material / Finished Goods Handling	
11	Machine handling	
12	Waste disposal	
13	Meeting visitors	
14	Adherence to SOP	
15	Issues reporting to authority	
Total Score		

Overall GMP Guidelines Evaluation

Sl. No.	Statements	Max Score	Obtained Score
1*	<i>The company has an updated FSSAI license and is displayed at a prominent location.</i>	4	
I	Design & Facilities		
2	The design of plant premises provides adequate working space, permit maintenance & cleaning to prevent the entry of dirt, dust & pests.	2	
3	The internal structure & fittings are made of non-toxic and impermeable material.	2	
4	Walls, ceilings & doors are free from flaking paint or plaster, condensation & shedding particles.	2	
5	Floors are non-slippery & sloped appropriately.	2	
6	Windows are kept closed & fitted with insect proof screen when opening to an external environment.	2	
7	Doors are close fitted to avoid entry of pests.	2	
8*	<i>Equipment and containers are made of non-toxic, impervious, non-corrosive material which is easy to clean & disinfect.</i>	4	
9	Premise has sufficient lighting.	2	
10	Adequate ventilation is provided within the premises.	2	
11	Adequate storage facility for packaging materials, disinfectant chemicals, personal items etc are available.	2	
12	Personnel hygiene facilities are available. (Adequate number of hand washing facilities, toilets, change rooms, rest & refreshment room etc).	2	
13	Potable water (meeting standards of IS:10500) is used in contact with packaging materials & tested for quality semi-annually.	2	
14	Food material is tested through certified laboratory.	2	
II	Control of operation		
15	Incoming material procured as per internally laid down specification & from an approved vendors.	2	
16	Raw materials is inspected at the time of receiving.	2	

17	Incoming material, semi or final products are stored according to their temperature and humidity requirement, in a hygienic environment. FIFO & FEFO is practised.	2	
18	Requisite time and temperature is being achieved, maintained, monitored & recorded while manufacturing/processing.	2	
19	Extracted oil is packed in a hygienic manner.	2	
20*	<i>Packaging materials is food grade & in sound condition.</i>	4	
21	Cleaning chemicals & other hazardous substance are clearly identified & stored separately from food.	2	
22	Transporting vehicle are kept clean and maintained in good repair.	2	
23	Transporting vehicle are capable of meeting requisite temperature (where applicable).	2	
24	Recalled products are held under supervision & destroyed or reprocessed/reworked in a manner to ensure their safety.	2	
III	Maintenance & sanitation		
25	Cleaning of equipment, food premises is done as per cleaning schedule & cleaning programme.	2	
26	Preventive maintenance of equipment and machinery are carried out regularly as per the instructions of the manufacturer.	2	
27	Measuring & monitoring devices are calibrated periodically.	2	
28*	<i>Pest control program is available & pest control activities are carried out by trained and experienced personnel.</i>	4	
29	No signs of pest activity or infestation in premises (eggs, larvae, faeces etc.)	2	
30	Drains are designed to meet expected flow loads and equipped with traps to capture contaminants.	2	
31	Food waste and other refuse are removed periodically from food handling areas to avoid accumulation.	2	
32	Disposal of sewage and effluents is done in conformity with standards laid down under Environment Protection Act, 1986.	2	
IV	Personal Hygiene		
33	Annual medical examination & inoculation of food handlers against the enteric group of diseases as per recommended schedule of the vaccine is done.	2	

34	No person suffering from a disease or illness or with open wounds or burns is involved in handling of food or materials which come in contact with food.	2	
35*	<i>Food handlers maintain personal cleanliness (clean clothes, trimmed nails & waterproof bandage etc) and personal behaviour (hand washing, no smoking, no spitting etc).</i>	4	
36	Food handlers equipped with suitable aprons, gloves, headgear, shoe cover etc; wherever necessary.	2	
V	Training & Complaint Handling		
37	Internal / External audit of the system is done periodically.	2	
38	Company have an effective consumer complaints redressal mechanism.	2	
39	Food handlers have the necessary knowledge and skills & trained to handle food safely.	2	
40	Appropriate documentation & records are available and retained for a period of one year or the shelf-life of the product, whichever is more.	2	
TOTAL			

Maximum Score : 90

Asterisk mark (*) questions may significantly impact food safety & therefore must be addressed as a priority. Failure in any of the asterisk mark (*) questions, will lead to Non-compliance

- 85-90 Excellent
- 80-84 Good
- 75-79 Satisfactory
- 60-74 Needs Improvement
- <60 Non Compliance

Employee Awareness Evaluation

SL NO	Questions	(Please put a ✓ against most appropriate answer)
1	What is the full form of GMP? a) Good Manufacturing Procedures b) Good Manufacturing Practices c) Great Making Procedures d) Great Manufacturing Practices	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2	GMP is _____ a) Mandatory for all manufacturing plant b) Optional c) Only for multinational firms d) Only for firms dealing with food items	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3	Why GMPs are implemented? a) To make food safely. b) To ensure the quality of food. c) To prevent food borne illnesses. d) For company's credibility	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4	Why sanitizer is used? a) Because its company's rule while entering in production area. b) To make your hands clean and hygiene. c) To kill microbes from hands. d) d. It gives fragrance.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5	For which reasons you should wash hands? a) After eating b) when you go in washroom c) when your hands get dirty d) Before entering in Production area e) All above	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6	If you have a casual personal visitor, what will you do? a) Tell him to meet you at your place b) Tell him to wait until the break time c) You go outside and meet him d) Tell him to meet you after office time.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

7	<p>Do you know why foot dip is used?</p> <p>a) Because its company's rule while entering in production area.</p> <p>b) To make your shoes clean</p> <p>c) To kill microbes from shoes or foot.</p> <p>d) By foot dip it is ensured that a person is safe to enter production area.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8	<p>When you deal with copra, What Personal Protective Equipment should wear?</p> <p>a) Apron</p> <p>b) Hairnet</p> <p>c) Mask</p> <p>d) Shoes and hand gloves</p> <p>e) Above All</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
9	<p>What are the reasons why wooden items are not used in Production area?</p> <p>a) Contamination with product.</p> <p>b) It cannot be detect in final product like metal.</p> <p>c) It is company's rule.</p> <p>d) Above all</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
10	<p>What is the importance of PPE like Apron, hairnet, Mask, Helmet and safety belts, gum boots, shoes etc.?</p> <p>a) For your safety as well as product safety.</p> <p>b) To make you more attractive.</p> <p>c) To assured your safety when you work at height or any risk.</p> <p>d) To stop Contamination</p> <p>e) To avoid potential health hazards.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
11	<p>Do you Know why Rodobox, fly catcher, strip curtains etc are used?</p> <p>a) Because its company's rule.</p> <p>b) To make company premises more beautiful.</p> <p>c) To prevent rats, lizards, insects, birds etc.</p> <p>d) Other</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
12	<p>What will be your approach, When you find above rodents in production area?</p> <p>a) Try to catch/kill them.</p> <p>b) Inform to your immediate supervisor.</p> <p>c) You will do nothing.</p> <p>d) Other</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

13	Do you know why drying of copra is done? a) Routine process b) Cleaning the copra c) Removing moisture d) Other	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
14	Do you know why 18 inch distance between pallets from wall is maintained? a) Its look good. b) To move or walk between pallets for inspection. c) To prevent rodents and dust. d) Both b & c	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
15	Which of the following is NOT a reason for conducting quality audits? a) To assure that the quality system is in compliance with the standards b) To determine the effectiveness of the quality system c) To fix a known inefficiency in the manufacturing process d) Routine process	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Total Correct Answers		

174513

