

INTERNSHIP REPORT



A report submitted in partial fulfillment of the requirement for the Award of degree of:

BACHELOR OF SCIENCE

IN

B.SC CHEMISTRY

BY

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PAN: AABCK8863F

CIN No. U15143TN2002PTC049397

IEC No. 0402015142

Ref. :

Date :

05/06/2023

TO WHOMEVER IT MAY CONCERN

This is to certify Ms.Hema .M, b.sc, chemistry final year from SATHYABHAMA UNIVERSITY, Chennai has completed her internship program in KTV HEALTH FOOD PVT LTD., From 18th May 2023 to June 5th 2023

During the mentioned period of her internship program with us she was found industrious, hardworking and inquisitive.

We wish her all the very best in her future endeavors.

Thanking you,

For KTV HEALTH FOOD PRIVATE LIMITED



Authorised Signatory

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ACKNOWLEDGEMENT

With profound sense of gratitude and regard I express my sincere thanks to the for their valuable guidance and patience instilled in me during the period of my internship.

This has helped me to know and understand the varied food and health products based on their income,taste,price of the food and the quality of the food etc..

During The course of time I have explored Industrial based products and it made me improve my skills and vision on it .

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Once again, I would like to thank the company for providing me the opportunity to flourish my knowledge for my future career .

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ABOUT COMPANY

KOG-KTV Food Products have the global expertise and the required skill to consistently produce great quality that can be felt and appreciated by discerning consumers.

- The company is a joint venture between KTV Health Foods Pvt Ltd, India and Wilmar International Ltd, Singapore. Wilmar International Limited is Asia's leading agribusiness group and is the largest global processor and merchandiser of palm and lauric oils. Its business activities include oil palm cultivation, edible oils refining, oilseeds crushing, consumer pack edible oils processing and merchandising, specialty fats oleochemicals and biodiesel manufacturing. Headquartered in Singapore, Wilmar's operations are located in more than 20 countries across four continents.

- KTV Health Foods Pvt. Ltd is the pioneer behind trusted edible oil brands such as Sunland Sunflower oil, Roobini Palm oil, Roobini Vanaspati etc. Apart from serving the end consumer market it offers a wide range of specialty fats and oils to meet the ever growing demand for Bakery, Snack food, Confectionary and Ice cream industries with its Bess brand of bakery shortening products

FEATURES

- Sunland Sunflower oil, Roobini Palm oil & Vanaspati are manufactured in state-of-art refineries and vegetable oil processing facilities. The company has two factories in Kodingiyur & Tuticorin with huge production capacity.
- The oil processing unit is extremely process driven and has excellent R & D facilities.
- The company has world class facilities such as fractionation, interesterification, and hydrogenation, shortening & packaging to meet

Kodungiyur, Chennai

Physical refining	300 mts / day
Consumer packs	300 mts / day
Storage capacity	5000 mts

Fractionation	100 mts / day
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Tuticorin

Physical refining	400 mts / day
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Consumer packs	300 mts / day
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Storage capacity	6000 mts
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Vanaspati	160 mts / day
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Fractionation	100 mts / day
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Speciality fats	100 mts / day
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TECHNIQUES USED

➤ FRACTIONATION

The process involves cleaning of the seeds, grinding of the seeds, pressing and extraction of crude oil from these seeds and then further refining the oil obtained before packaging.

- A volatile hydrocarbon like hexane is used as a solvent to extract the oil.
- Sunflower is crushed for oil recovery via one of two process methods, hard pressing or prepress solvent extraction. Hard pressing relies upon exerting high pressure on the prepared seed to separate oil from the solids

fraction, historically recovering about 25% oil from the seed.

- Solvent fractionation of sunflower oil with an increased content of stearic and oleic acids was carried out in one stage.
- The solvent extraction process contains miscella mixture of oil and hexane

➤ INTERESTERIFICATION

Interesterification is a means of modifying the structure and functionality of fats and oils to produce food ingredients for a range of applications, which can help to reduce levels of saturated fatty acids (SFA) and *trans* fatty acids (TFA) in some foods, by providing an alternative to the use of animal fats or partially hydrogenated oils, respectively.

- Interesterification involves a rearrangement or reshuffling of the fatty acids on the glycerol backbone of the triglyceride molecule. Interesterification is catalyzed by an alkaline

catalyst or by a lipase enzyme. The most commonly used alkaline catalysts are sodium methanolate and sodium ethanolate.

➤ HYDROGENATION

- Hydrogenation is a chemical process that adds hydrogen to the unsaturated bonds on the FA chains attached to the TAG backbone.
- In this way, an unsaturated fat can be turned into a saturated fat and increase its melting point.
- Adds hydrogen to vegetable oil which cause oil to become solid at room temperature .
- This uses nickel catalyst changes the unsaturated fat to saturated fat.

PRODUCTS PRODUCED

➤ Sunflower oil:

- Seed preparation and cleaning
- Grading the seeds into large, medium, and small sizes
- Cool press and solvent extraction
- Mixture of oil and hexane
- Distillation
- Hexane vapour
- Condensation
- Solvent waste separator
- Hexane solvent is out
- The oil is obtained after the distillation process and bagged
- Storage

➤ FEATURES :

- It is a light oil and is easily digestible.
- Rich in vitamin A, D & E .

- Sunflower oil are more with oleic acid are higher in monosaturated fats and lower in polysaturated fats.

➤ **PALM OIL :**

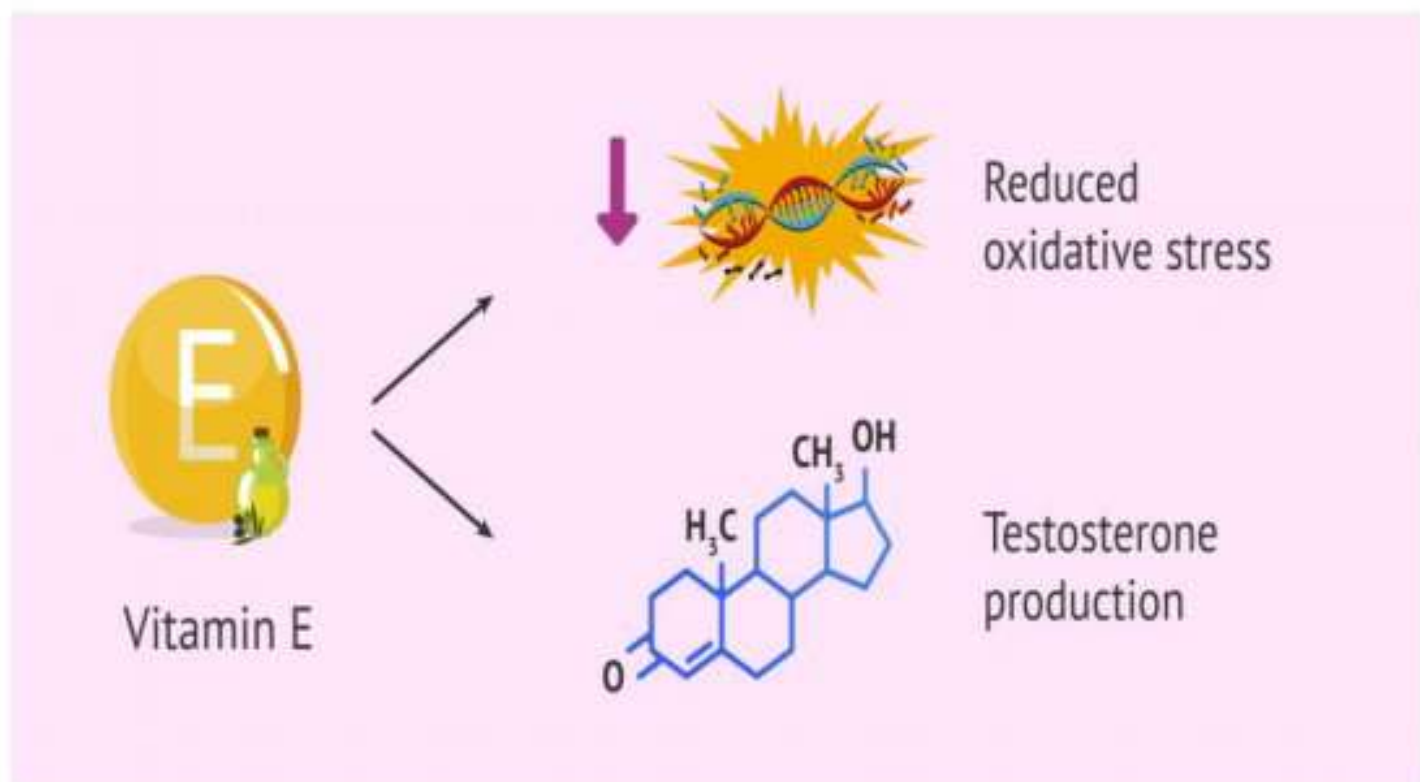
- To facilitate manual removal of fruit.
- To remove and sort fruit from spikelets
- Sterilization of the bunches
- Extraction of the palm oil .
- Refined palm oil contains Vitamin E, A and beta carotene .
- It lowers Cholesterol. Beta carotene helps in good night vision.
- It is good for the skin, and helps in bone growth.
- It plays a vital role in organ protection, tissue membrane structure & metabolism.
- Presence of natural oxidants like Tocopherol plays a protective role in cellular ageing & cancer.

➤ **VANASPATI:**

- By passing hydrogen gas, vegetable oil unsaturated fatty acids are converted into saturated fatty acid and they undergo hydrogenation to obtain the desired product.
- Vanaspati is purified hydrogenated vegetable oil which is fortified with vitamins A.
- Its semi solid consistency makes it an ideal medium for the preparation of sweets especially because it's a cheaper substitute for ghee.

➤ VITAMIN E OIL :

- Natural vitamin E oil is obtained by vacuum distillation of vegetable fats derived from non-GMO soy sources. It is great for preventing rancidity in cosmetics, and it acts as an anti-oxidant in creams, lotions, baby products, cosmetics and more.
- Natural vitamin E is mainly extracted from vegetable oil deodorizer distillate and other plants rich in vitamin E.



➤ **RAW MATERIAL :**

- Fats and oils of vegetable origin as well as their by-products are considered raw materials that originate from various vegetable sources. These mainly include oilseeds such as soybeans, rapeseeds, sunflower or camelina. However, they may also derive from certain fruits like: olives, coconut or palm.
- The most prominent oily seeds used in global industrial oil production are soy, sunflower, cotton, rapeseed, peanut, sesame, safflower, opium, flax, hemp, jojoba, corn, olive, date and coconut and palm oil.
- Vanaspati are made from palm or palm olein oil. Hydrogenation is brought about by using nickel as a catalyst in reactors at low to medium pressure.
- Sunflower oil contains linoleic acid, which is considered as an essential fatty acid for maintaining the normal barrier function of the epidermis .

- 50% vitamin E (d-alpha tocopherol, d-beta tocopherol, d-gamma tocopherol, d-delta tocopherol.) and 50% (GMO Free) refined soybean oil.

➤ **APPLICATIONS AND USES :**

- Fats and oils make an important contribution to adequate nutrition, they are a source of energy for the body, they insulate and protect the body's vital organs, they are a source of essential fatty acids and they are required for the absorption of the fat soluble vitamins A, D, E and K.
- Fats and oils are used as shortening to enrich foods, particularly bread, cake, and pastry. Many oils are eaten as salad dressings and as part of fried foods. (See also Food and Nutrition.) Fats and oils are widely used as fuels and lubricants.

➤ CONCLUSION :

- Through my internship I was able learn how the food and health industry works on and their uses in our day to day life.
- This industrial internship provided a valuable learning experience and taught the facts and ideas applied to them in real – life and I came to know about the basic product validation, the variety of machines used in industry.
- It helped me to enhance my knowledge and have created a interest in learning through an exposure to new educational experience.
- And I would like to thank the staffs for providing me a opportunity to learn about the basic process in industrial level.