

Design and Fabrication of Portable Virgin Coconut Oil Extracting Machine

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ABSTRACT- Coconut is one of the major source of healthy food products. Coconut was grown in various countries in various parts of the world, which contain nutrients and saturated fatty acids. The production of coconut is spread over the Karnataka, Kerala and Tamilnadu. Compared to all other oil seeds, coconut has the highest percent of advantages as well as consistency in production less susceptible to abnormal climatic condition.

In conventional extraction processing is carried over by continuous Pressing, Hydraulic presses these are used in the large installations. But those machines are not flexible enough to produce virgin coconut oil and those machines not suitable for virgin oil for their higher cost, larger machine size.

This project work aim on design and fabrication of portable coconut oil extraction machine which will eliminate all drawbacks the machine is light in weight which makes it portable and can be used for industrial production. Machine can be handle by unskilled labour and there is less need of power source as it is manually operated.

KEY WORDS: oil extraction, compact model, simple mechanism on oil extractions, Virgin coconut oil, Yield of VCO.

INTRODUCTION

Today the industrial sector in India is hit badly due to lack of power and improper management in small scale production. This is the basic reason for the developing a virgin coconut oil extraction machine.

Extraction machine refers both to manual and economically as a mode of daily commuting aspects as well as the use of virgin oil in a commercial activity, which is the natural oil obtained from fresh coconut by various extraction methods as well as being efficient in operation and durable.

In this project fabrication of virgin oil extraction machine using simple designs and mechanism is carried out. It is used in small scale and mass production for utilization of advance mechanism.

The machine is efficient in both biological and mechanical terms. The extraction machine is the advanced human-powered means of manufacturing in terms of energy a person must expend to producing a given product from mechanical viewpoint, although

the use of threading mechanisms may reduce this by 10–15%. In terms of the ratio of weight an extraction machine can carry a more pressure.

The machine measured each operation power output in liters. In lab experiments an average "in-shape" can produce about a liters /10 nuts for more than 10 minutes.

AGRICULTURE:

Agriculture was developed at least 10,000 years ago, and it has undergone significant developments since the time of the earliest cultivation. Independent development of agriculture is also believed to have occurred in northern and southern China, Africa's Sahel, New Guinea and several regions of the Americas. Agricultural practices such as irrigation, crop rotation, fertilizers, and pesticides were developed long ago but have made great strides in the past century. The Haber-Bosch method for synthesizing ammonium nitrate represented a major breakthrough and allowed crop yields to overcome previous constraints. In the past century, agriculture has been characterized by enhanced productivity, the substitution of human labor for synthetic fertilizers and pesticides, selective breeding, and mechanization.

OBJECTIVE OF THE PROJECT WORK

To overcome the limitations of existing system the proposed concept helpful in a way as mentioned below.

- Unskilled people can also make the business
- Illiterate people also make the business
- Risk of high investment can be eliminated
- Operation is simple and time conserved

LITERATURE REVIEW

Present technology

1. Hydraulic press type



Limitations

- The size of machine is large
- Cost of machine is high
- It needs more space
- Need of regular maintenance

- Need of skilled labour

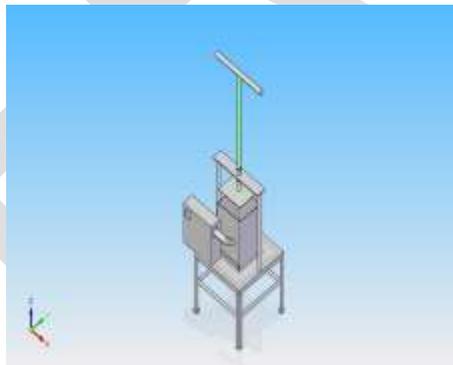
2. Conventional type



Limitations

- Need of wood to heat the coconut meat
- It is not portable
- Hazardous to health
- Require more time to get oil

PROPOSED 3D MODEL



Design of portable virgin coconut oil extraction machine

List of the Components

- Screw rod
- Cylinder
- Piston plate
- Tray
- Frame
- Table stand
- Hot air chamber

Operation of working machine



Working

This extraction machine consists of an adjustable box, vertical presser and frame, table stand for production mechanism. The manual pressure is applied on the coconut meat. The assembly can be mounted on table stand. A box containing the coconut meat attached to the tray and frame. While the thread is rotated by manually, the piston moves vertically downwards inside the box with a high pressure on the coconut meat, the extracted virgin coconut oil comes out through the container holes.

The collected oil is containing lauric acid it is very useful to the healthy and long life

- Initially the main scraping of coconut flesh into fine particles. Drying to 8-10% moisture content by using hot air drier and filtration to remove sediment. Coconut flesh is filled to box at required height, after the feeding of coconut flesh. Which will compress the coconut meat, due to the compressing of the given coconut flesh virgin coconut oil is obtained.
- Extraction for domestic use, extraction which can produce about 250 ml oil from 4 coconuts at a time.

Making virgin coconut oil is simple and doing the work yourself will save you money. This luscious oil can be slathered on your skin as a moisturizer or you can even cook with it. The saturated fat found in coconut oil is actually good for your health. Coconuts contain healthy fats that help to lubricate the joints, and reduce inflammation within the body. The oil also has a fresh slightly sweet taste that works well with many dishes

This machine is efficient and easy to operate and maintain. As it is produce a virgin product with adjustable height and width of vertically presser, there is greater durability in production. Since machine requires less space to move, it can be used in a more versatile manner as compared to power machines that are mounted on heavy and bulky industries. A labor saving device, it can be used to extract more than 8 litres in 1 to 2 hours thus covering more time compared to hydraulic jack machine. Easy to assemble and dissemble, it serves the dual use of work.

ADVANTAGES

- Less initial cost
- Compact
- Durable
- Less time consumption
- Less power consumption

APPLICATIONS

It can be used in places like hotels, bakeries and wherever coconut oil is extracted.

Made an impressing task in canteens, hotels and bakeries. It is very usefully for the workers.

CONCLUSION

- The machine has a simple construction and is light in weight which makes it portable and can be used for both domestic and commercial purposes.
- This machine can also be operated by unskilled person.
- This machine is widely used for extraction the contents like coconut,
- This machine can also be used for high production in small scale industries.

Our intention is to overcome those above problems by applying engineering knowledge and to give the good machine to produce virgin coconut oil by using these machine they can produce products in reliable way and to compete in the market.

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