

PDF - DEVELOPMENT AND CONSTRUCTION OF A MANUAL ORANGE JUICE EXTRACTOR - researchcub.info

CHAPTER ONE

1.1 Introduction

Oranges are one of the most popular fruits for eating out of hand and most important source of fresh juice having a distinctive flavour and high amount of vitamin A, B and C (Aye et al., 2012).

The orange fruit is a specialized type of berry known to the botanists as hesperidia. It has a soft, pithy central axis surrounded by 10-15 segments containing pulp and juice. Enclosing the segments is a leathery segment which contains juice that is sugary; several organic acids (chiefly citric acid) many other components; which give it a distinctive flavour; and high amounts of vitamins A, B and C. (Aye et al., 2012).

Oranges grow on evergreen trees of the family Rutaceae. The trees grow to a height of about 30 feet (9m) and are symmetrical and upright. The fruit varies in the number of seeds, from none to many. Orange is one of the major source of vitamins among other fruits in the world and it is globally recognized (Wiseman, 2013). In Nigeria, orange is mostly found in the middle belt particularly in Benue state that is commonly known as food basket of the nation as its slogan.

A very large number of orange is harvested yearly in Benue state and exported to other part of the country where it is either consumed naturally or converted to juice in addition with other fruits (Wiseman, 2013).

Orange trees are widely grown in tropical and subtropical climates for their sweet fruit. The fruit can be eaten fresh, or processed for its juice or fragrant peel. As of 2012, sweet oranges accounted for approximately 70% of citrus production (Bailey and Robert, 1998).

The need to meet household demand for freshly made fruit juice is of paramount interest to all those who desire to take juice at its natural state without adding any preservative to it.

Orange is one of the most important fruits and source of vitamin desired to be consumed in its natural and fresh nature that allow the consumers to benefit from it. Medically, orange serves as a catalyst to facilitate digestion and also as a means of reducing constipation in adolescents (Christopher, 2015).

1.2 Statement of problem

Manual orange juice extraction using hands have low capacities and low efficiencies, sometimes unhygienic, and can hardly meet demand for large quantities of juice. Extraction of orange juice using electrically powered juicers has the limitations of irregular supply of power and sometimes most electrically power juicers are expensive to buy and may require regular maintenance.

In order to optimize the volume of juice extracted using a manually with manual extractor, there is need to develop an orange juice extractor using stainless steel to obtain juice from oranges with little effort and meet home demand for hygienic and fresh orange juice.

1.3 Aim and objectives

1.3.1 AIM: The aim of this project is to develop a manually operated juice extractor that will extract juice from the orange fruit using stainless steel and encourage hygienic fresh orange juice consumption.

1.3.2 Objectives:

- a. To develop a manually operated juice extractor
- b. To construct the juice extractor
- c. To evaluate the constructed juice extractor

1.4 Justification

Development and construction of manually operated orange juice extractor will in many ways discourage the

consumption of juicecontaining artificial preservatives which might be harmful due to long termconsumption. The constructed juice extractor will require no special skill to operate it, should be affordable, portable and attractive using stainlessmaterials.

1.5 Scope and limitation

This project work is limited to the development and construction of a manual orange juice extractor using stainless steel.

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