

CHAPTER I

Introduction

1.1 Background of The Study

1.1.1 Red dragon fruit (*Hylocereus costaricensis*)

Red-fleshed dragon fruits (*Hylocereus costaricensis*) or also known as Costa Rican pitaya, purple pitaya, strawberry pear cactus or Costa Rica nightblooming cactus is a plant of cactus species, its origin from Costa Rica and Nicaragua (Central America and Mexico). *Hylocereus polyrhizus* or more commonly known as the pitaya or the dragon fruit is a member of the Cactaceae family from the genus *Hylocereus*.

The flesh of the fruit is red purple in color when ripened with minute black seeds interspersed (Hoa *et al*; 2006). This species is famous for its Pitahaya fruits but it's also famous for its magnificent ornamental vine with huge flowers. These fruits are called "dragon fruit" since around 1963 known in English, apparently, it's from the leather-like skin and prominent scaly spikes on the fruit exterior. In the United States, Florida and California produce these brightly fleshed fruits, in the off-season they come directly from their native. The red-fleshed dragon fruit are rarer than the yellow skinned variety and are not nearly as widely available as the white-fleshed variety.

The red-fleshed dragon fruit variety has been planted in many different tropical and subtropical locations as the popularity of the white-fleshed dragon fruit has been increased. It is a hardly plant that is native to arid tropical regions but can grow in many sub-tropical regions around the globe. The Costa Rican Pitaya can be found grow in Indonesia, Malaysia, Taiwan, Vietnam and other regions. Since 2015, growers are planting redder dragon fruit cactus rather than the white variety because it tends to flower more, produce more fruits, and can fetch a higher price on the global market. This fruit has gained much interest in the society because of its exotic features, attractive color, nutritional value and pleasant taste (Le Bellec *et al*; 2006)

Red dragon food is often eaten raw or process the fruit into some dishes. It is juicy and sweet and the seeds were edible, and you could process the rind into something edible. Red dragon fruit is categorized as a tropical fruit and widely consumed by people around the the world including Indonesians.

Red dragon fruit contains high amounts of vitamin C and has a high fiber content. Every 100 grams of dragon fruits contain about 4-25 milligram of vitamin C. They are also a good source of potassium and phosphorus, as well as other mineral and B-complex vitamins. Red dragon fruit is rich in protein, antioxidants (from the betacyanins) lycopene and carotene. The benefit of dragon fruit includes improving the health of the eyes and skin, including protecting the skin from ultraviolet damage. But eating too much fresh dragon fruit can cause a laxative affect

1.1.2 Red Dragon Fruit Skin

Overflowing amount of red dragon fruit skin as a waste especially after a harvest season and always being thrown all the time. Dragon fruit skin ranges from 30-35% of the total weight of a dragon fruit and has more several advantages compared to the flesh.

There are still lots of people who do not know the benefits of the red dragon fruit skin. red dragon fruit skin contains higher antioxidants compared to the inside of a dragon fruit. Phenolic content found in the skin of red dragon fruit amounted to 28.16 mg / 100 gr, while the phenolic content on the inside of the red dragon fruit only of 19.72 mg / 100 gr. Besides having a high antioxidant content, red dragon fruit skin also contains plant color pigments called anthocyanin (red-purple-purple plant pigments). Red dragon fruit skin is very easy to obtain and easy to process because it has soft structure, so it is easy to cut and does not require a long process.

1.2 The Objectives of the Study

The objectivity of learning the Research and New Development Product is Ottimmo's students can utilize resources or materials that are normally disposed into something useful and edible food and safe for human. This learning enhances new products for consumption by the society, using existing materials. By creating a new product or developing an existing product with waste materials. In this Research and New Product Development, students use a variety types of materials, ranging from the remaining skin and fruit seeds, creating vegetarian and vegan products, and many more.

There are several factors that influence the selection of materials to be used, one of them are health and the environment. Since there are still many materials/ ingredients that can be used and processed but not yet explored by many people. This has the potential to be processed and developed. In terms health has a quite important role, turns out that many of the benefits are came from fruit skins/rind and still not known by many people. Most people only consume fruit on the inside, the skin will remove because it was considered useless. Though there are some fruits that have very good skin for health. There are even some fruit skins that contain more vitamins than the fruit itself. So, students are asked to create something that can be consumed and safe for humans that are nutritious, healthy and rich in vitamins.

1.3 The Benefits of Study

The Research and Development study helps students to think critically and creative. The students are asked to create or develop a product, more precisely edible products and safe for human consumes. The products can be created by various ingredients. By doing this study, the students study a lot of new ingredients and learn how to develop into new products. The students explore lots of ingredients and what

products can be developed from those ingredients, by creating a new nutrition and health benefit product.

This research is created to maximize the waste of red dragon fruit skins, into something new and beneficial. This study is also to educate readers to understanding the benefit of product, to overview of the new product and educate readers about business plan of making a new product.

By making this report on the research and product development, many people can read and learn from this report. The report could help others to have a plan on developing the same product in similar way by using the same ingredients or different. Information are provided in the report to help people on their research.