CHAPTER 1

PRELIMINARY

1.1 Background

Activities of daily life under the blazing sun can cause skin problems in the face and if not treated well cause problems such as dead skin cells, inhibits the production of collagen, the formation of wrinkles on the face or on the skin (Rahim, 2014). The skin is an organ that covers the entire human body, and has the power to protect against external influences, and becomes a supporter of the appearance of someone who must be cared for, maintained, and maintained so that the skin feels healthy and well-maintained (Wirajayakusuma, 1998). Skin is an organ that can cause a problem because of some adverse effects such as air pollution and sun exposure. The sun's rays are exposed to cause the radical formation of Reactive Oxygen Species in the skin.

Reactive Oxygen Species (ROS) is one that is on the surface of the skin as singlet oxygen which attacks cell membranes and forms new Reactive Oxygen Species. Skin damage due to oxidation reactions on the skin caused by DNA damage by Reactive Oxygen Species. Free radicals are defined as a molecule, atom or several atoms which have one or more unpaired electrons in their outer orbitals. Molecules or atoms in free radicals are unstable and easily form new compounds if, this reaction will continue in the body and if not stopped it will cause various diseases (Muchtadi, 2009). Antioxidants are compounds to neutralize free radicals function to protect the body from disease by binding to free radicals and reactive molecules that can damage cells (Budiarti, 2014). Antioxidants are believed to be able to counteract free radicals by preventing damage to DNA because oxidation reactions in the human body and antioxidants can delay or prevent premature aging (Tjandrawinata, 2011).

Cosmetics are preparations or pharmaceutical ingredients used on the outside of the body such as skin, nails, teeth, etc. The function is to change appearance, cleanse, eliminate body odor or smell body and maintain the body (BPOM, 2011). The main purpose of cosmetics in the use of modern society is to increase self-interest, increase self-confidence, cleanse, protect skin and hair caused by pollution and sunlight, and can prevent premature aging (Septiani, 2011)

Peel off masks contain antioxidants made from natural ingredients to treat the skin, especially in the face. Peel off gel mask is a preparation to provides benefits such as relaxing facial muscles, cleanse and refresh, moisturize, and soften facial skin (Agnia, 2015). HPMC (Hydroxypropyl Methylcellulose) is a filmmaker which use commonly combined with other filmmakers, HPMC films are good and acceptable but have disadvantages that are slightly brittle and rough surfaces. PVA is a film forming has advantages with a smooth and not brittle surface but has disadvantages, namely in a single use can produce a sticky film (Remalya, 2016).

Allah S.W.T has created this nature for all creatures, especially in humans with various kinds of plants that have the benefits of each - many and various kinds of plants that have medicinal properties. Some of the blessings of Allah S.W.T have been listed in the book of Allah, the Qur'an which must be used and studied by a Muslim who is His servant. In the Quranic proposition in As - Syu'ara verse 7 which reads:

أَ وَلَمْ يَرَوْا إِلَي الأَرْضِ كَمْ أَنْبَتْنَا فِيْهَا مِنْ كُلِّ زَوْجٍ كَرِيْمٍ (٧)

«And did they not pay attention to the earth, how much did we grow on the earth various kinds of good plants?» (As-Syua›ara 7).

Red rice has high antioxidant activity (Dwiyanti, 2013). Red rice has a sunblock activity against UVA and UVB radiation (Suda, 2013). Both of these effects are caused by the anthocyanin content of a pigment which gives the red color found in the pericarp layer to the outer layer of red rice endosperm. Anthocyanin is a component of the polyphenol derivative

flavonoids (Indrasari, 2010). According to the background, the researcher will conduct this research.

1.2 Problem Formulation

Formulation of the problem in this study are:

1. How much antioxidant activity of red rice (Oryza rufipogon Griff) extract with the calculation of IC_{50}compared to vitamin C?
2. How are the characteristic results of the red rice *(Oryza rufipogon* Griff*)* extract peel off mask formulation?
3. How much antioxidant activities in the formulation of the red rice (Oryza rufipogon Griff) extract peel off mask with IC_{50} calculation?

1.3 Research Purpose

In this study the objectives are as follows:

1. Knowing how much the antioxidant activity of red rice *(Oryza rufipogon* Griff*)* extract with the calculation of IC_{50} compared to vitamin C.
2. Knowing the characteristic test results of the red rice (*Oryza rufipogon* Griff*)* extract peel off mask formulation.
3. Knowing how much antioxidant activity in the formulation of peel off red rice *(Oryza rufipogon* Griff*)* extract mask with IC_{50} calculation.

1.4 Benefits of Research

1.4.1 Theoretical Benefits

The results of this study are expected to provide scientific information to determine the antioxidant activity of the active ingredient of red rice in the peel off mask formulation.

1.4.2 Practical Benefits

This research can provide many benefits, especially in the field of cosmetics in the form of masks that are currently circulating rapidly in the market, and provide benefits to the cosmetics of natural

materials. Making red rice has superior benefits not only in the field of food but in the cosmetics field. The preparation of peel off mask from red rice extract can improve the quality of products that are not less superior with other mask preparations in which become trending among the community, especially for women. Making the peel off red rice extract mask as a formulation mask is useful to help repair skin degenerative diseases due to UV light and prevent premature aging.