CHAPTER 1 – INTRODUCTION

1.1 Background

Food product that have been processed through frying has been a great interest, especially for the Indonesian people. Although the product may fulfill the taste buds , especially fried battered product contains high oil and may absorb oil up to 15% of the product weight. (Rossel, 1998). Fried product consumption along with inactivity have been associated with Cardiovascular and related diseases (CNN Indonesia ; www.depkes.go.id)

Due to above problem, there is increasing interest to find solution in increasing interest to find solution in reducing oil consumption along with healthier eating habit. (Sanz et al.,2007; Sajilata et al.,2006). Resistant starch is found to have the ability to reduce oil absorption and oil pick up. (Belobrajdic et al., 2012).Additionally, resistant starch works like the dietary fiber but can maintain the sensory and rheological properties of food. It shows that resistant starch shows to increase the sensory and rheological properties of food such as improving crispiness, giving better mouth feel, color and flavor (Sajilata et al., 2006).Due to the characteristic and effect, resistant starch have the potential to be applied in batter flour formulation to reduce oil absorption in fried food and improve the nutritional quality. There is possibility that the above advantaged owed to Resistant Starch type 3 character as retrograded amylose and starch (Birt et al., 2013) that have the properties of good gelatinization and heat stable (Musita, 2009) .

Resistant starch type 3 is not directly available. One method of obtaining RS3 is through modification of RS 2 that are found in unripe banana which have higher resistant starch content (45.87±2.73) compare to cassava and taro (Moongngarm A. 2013) . One of the potential variety from the banana family is the “kepok” banana. In the kepok (*Musa paradisiaca formatypica*) banana is found to contain 22.01 % of starch resistant starch of 27.70% (Musita N ,2009). There are 2 types of kepok

banana : white and yellow. Currently, the white kepok banana is still underutilized and consumed mostly as feed for bird due to its taste. With the condition and the available potential, white "kepok" banana can be used as cheap source the resistant starch source that expected to enhance its economical value.

Previous study in the application of Resistant starch to batter coating showed a better product acceptance of battered added / mixed with RS2 compared to RS 3 (Sanz et al., 2008). However due to RS2 instainibility at temperature higher than 100°C further research is required to find way in the application of RS 3 in batter coating with higher sensory acceptance.

In this research, substitution of RS3 from white kepok banana in batter coating will be observed for its effect in its oil absorption and sensory properties in comparison to batter coating using whole wheat flour and addition of RS 2. With the research, finding of a healthier batter coating for fried product is done so that people can still enjoy eating fried foods with lower fat intake, high content of resistant starch that act similarly to the dietary fiber but still maintain a good sensory properties.

1.2 Research Problem

- Banana is known to be potential as the source of resistant starch but modification of banana starch is still needed to optimize the yield of resistant starch.
- Ratio of resistant starch used in the formulation of battered coating that result in the least oil absorption is still unknown.
- Ratio of resistant starch used in the formulation of battered coating that is most acceptable through sensory evaluation is still unknown

1.3 Research Objectives

The aim of the research is to increase the utilization of unripe "Kepok " banana ***(Musa paradisiaca formatypica)*** by using it as the source of resistant starch and applying it in batter coating formulation provide a healthier batter coating contributes to low oil absorption.

1.4 Significance of study

This study is significant for 2 reasons :

- Providing a battered fried food with low fat content and dietary fiber contributed by resistant starch but with acceptable sensory properties.
- Shows that Resistant starch type III (RS 3) from unripe " kepok" banana could be accepted by appearance , since previous study done by Sanz et al., 2008 shows that RS 2 taken from tapioca and maize starch is more acceptable in appearance compare to RS 3
- Increasing the economic value of Indonesia local banana

1.5 Research Question

- Which modification method will have the best result in terms of modification of the banana starch to achieve the resistant starch type 3 with the highest yield?
- Which ratio from the range of 10 – 50% will have the least oil absorption from the resistant starch used in the batter coating formula?
- Which ratio from the range of 10 – 50% of resistant starch used in the battered coating formula will be the most acceptable based on sensory evaluation?

1.6 Hypothesis

- Combined method of debranching and autoclaving – cooling is the best modification method of RS 2 to RS 3
- Ratio of in between 50 % resistant starch from the unripe " kepok" banana in the formulation of battered coating will have the least oil absorption

- Ratio of 30% resistant starch from the unripe " kepok" banana in the formulation of battered coating will be the most acceptable based on sensory evaluation