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2009

PRODUCT IMPROVEMENT OF CHOCOLATE WITH  
WHITE GRUBS AS CRUNCH

*Research Study*

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*April 2009*

**PRODUCT IMPROVEMENT OF CHOCOLATE WITH  
WHITE GRUBS AS CRUNCH**

A research study presented to the  
Faculty of Science High School  
College of Education  
Cavite State University  
Indang, Cavite

In partial fulfillment on the  
Requirements for graduation



*Product improvement of chocolate with  
white grubs and crunch  
664.5 All 2009  
RS-565*

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## **ABSTRACT**

**ALCANTARA, FRANCIS POL D. DELA PEÑA, JASPER F. ILLANA, RODRIGO A. III. Product Improvement of Chocolate with White Grubs as Crunch.** A Research Study. Applied Research III, Science High School, College of Education, Cavite State University, Indang, Cavite. April 2009. Adviser: Dr. Evelyn O. Singson.

The research on Product Improvement of Chocolate with White Grubs as Crunch was conducted from August 2008 – March 2009. It aimed to determine the best cooking method to be used in cooking method to be used in cooking the white grubs for the chocolate crunch to determine the acceptability of the improved product and which treatment combination produced the best chocolate in terms of sensory attributes and general sensitivity.

White grubs were gathered from Buna Cerca, Indang, Cavite and Atalaro, Mendez, Cavite, these were cleaned thoroughly by removing the legs, heads and internal organs and almonds and white grubs were prepared based on the desired treatment.

The cooked white grubs were placed in a molder and the melted chocolates were poured in carefully. Then, the molder with the chocolate and cooked white grubs was chilled in the refrigerator for the chocolate, white grubs and almonds to set in completely or as long as it takes the shape of the molder.

The following treatments were used:

**Factor A: Cooking Methods**

**A<sub>1</sub> – Grilling (grubs were cooked over charcoal for ten minutes)**

**A<sub>2</sub> – Roasting (grubs were cooked over the open flame for ten minutes)**

**A<sub>3</sub> – Frying (grubs were cooked on a frying pan using oil for approximately 3 minutes)**

**Factor B: Combination of white grubs and almonds**

**B<sub>1</sub> - 50% Almond Nuts coated with chocolate + 50% White Grubs**

**B<sub>2</sub> - 60% Almond Nuts coated with Chocolate +40% White Grubs**

**B<sub>3</sub> -70% Almonds Nuts coated with Chocolate +30% White Grubs**

Thirty (30) panelists were used as respondents in the evaluation of the sensory attributes per replication which is equal to 60 panelists per treatment and 100 respondents for the general acceptability of the best product.

The study revealed that A3B3 (frying and 30% white grubs) was the product chosen to be the best among the sets of products. All the attributes had no significant values except in terms of “crunchiness”

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# **PRODUCT IMPROVEMENT OF CHOCOLATE WITH WHITE GRUBS AS CRUNCH**

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A research study submitted to the faculty of Science High School, College of Education, Cavite State University in partial fulfillment of the requirement for graduation, under the supervision of Dr. Evelyn O. Singson.

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## **INTRODUCTION**

Chocolate is a food produced from the seeds of cacao, a small tropical tree. It is produced in solid cakes and in powdered form. Because of its delicious flavor, chocolate is used in many candies, desserts, beverages and as a flavoring ingredient or coating for various confections and bakery products. It is highly nutritious and it contains small amounts of caffeine and theobromine, with stimulants.

White grubs or grub worms, of which there are over a hundred species, are larvae of May and June beetles. These beetles are from light to dark brown in color, and are robust in form. They eat the leaves of deciduous and coniferous trees. The larvae or grubs are white, curved – bodied, with brown heads and three pairs of legs. The hind part of the abdomen usually appears darker because the soil particles inside are shown through the transparent wall. These ever – hungry worms feed on roots of plants like bluegrass, timothy plant, corn, soybeans and other crops, and on tubers of potatoes. They often ruin bluegrass pastures and may become serious as pests of lawns and nursery plantings. Most severe damage occurs on crops that follow grass sod (Wäckers, van Rijn and Bruin 2005).