

**HYPOGLYCEMIC EFFECT OF THE VIRGIN OIL OF COCONUT (*Cocos
nucifera* Linnaeus, Arecaceae, Arecales) ON THE BLOOD GLUCOSE LEVEL OF
ALLOXAN-INDUCED HYPERGLYCEMIC ALBINO MICE (*Mus musculus*)**

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In Partial Fulfillment
Of the Requirements for the Degree of
Master of Science in Biology

By

Betty Jane P. Caral

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This thesis entitled “**HYPOGLYCEMIC EFFECT OF THE VIRGIN OIL OF COCONUT (*Cocos nucifera* Linnaeus, Arecaceae, Arecales) ON THE BLOOD GLUCOSE LEVEL OF ALLOXAN-INDUCED HYPERGLYCEMIC ALBINO MICE (*Mus musculus*)**” prepared and submitted by Betty Jane P. Caral in partial fulfillment of the requirements for the degree of Master of Science in Biology has been examined and recommended for acceptance and approval for oral examination.

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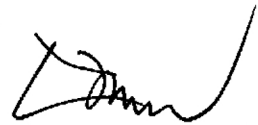

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ABSTRACT

The effectiveness of virgin coconut (*Cocos nucifera*) oil in lowering blood glucose level of alloxan-induced hyperglycemic albino mice (*Mus musculus*) was evaluated.

Fifty-four male and female healthy albino mice (Namro strain) were selected as test animals. The average baseline blood glucose levels before and after administration of alloxan were then determined. The mice were randomly assigned to the three treatment groups namely: the test group which received virgin coconut oil, the positive control group which received regular insulin, and negative control group which received isotonic saline solution. Blood glucose levels were then determined at 0, 2, 4, 6 and 24 hours following the administration of their respective substances.

It was observed that virgin coconut oil (VCO) possessed blood-sugar lowering activity in alloxan-induced hyperglycemic albino mice. The hypoglycemic activity of VCO was compared to those of regular insulin (RI) and isotonic saline solution (ISS) in alloxan-induced albino mice. This study has shown that RI causes a faster decrease in BGL and normalizes BGL within 4 hours. VCO has shown gradual hypoglycemic effect within 6 hours, normalizing BGL at 6 hours post-treatment. Moreover, the hypoglycemic effect was sustained until 24 hours post-treatment. This indicates that the duration of hypoglycemic effect of VCO is longer than RI whose hypoglycemic activity lasted only for 4 hours. Although BGL of positive control group was still within the normal range at 6 and 24 hours post-treatment, the levels were already increasing after the 4th hour post-treatment, which is the peak of RI's potency.

The present study indicates that VCO should be studied further and if similar findings are shown with VCO, the community will have further insight into the oil's role in glucose metabolism and its potential in treating diabetes mellitus.

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Chapter 1

INTRODUCTION

Among the lifestyle diseases threatening the country today, the most daunting is Diabetes Mellitus. Diabetes mellitus is a group of disorders characterized by an abnormally high blood glucose level (Eschelmann, 1991). It describes a metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat, and protein metabolism resulting from defects in insulin secretion, insulin action, or both (WHO, 1999)

Diabetes is a major threat to global public health that is rapidly getting worse, and the biggest impact is on adults of working age in developing countries. At least 171 million people worldwide have diabetes. This figure is likely to reach more than double by 2030 at 366 million (WHO, 2005)

Based on the recent estimates of the World Health Organization (WHO), there are at least five million diabetics in the Philippines and half of them are not aware that they have the disease. Consequently, the Philippines have been included in the top 10 countries with highest diabetes prevalence by year 2030. In the next 25 years, WHO predicted that the Philippines and Egypt would replace Italy and the Russian Federation in the top 10 lists as diabetes rates in both countries continue to escalate (WHO, 2005)

Diabetes manifests in various ways and in different degrees making the disease challenging to treat. Patients affected undergo significant lifestyle changes involving diet, medication, injections, and constant concern that the quality of life is also continuously challenged (Mehta et al., 2002)