

THE EFFECTS OF TAHITIAN NONI (*Morinda citrifolia*, Rubiaceae) JUICE
ON THE BLOOD GLUCOSE LEVEL OF ALLOXAN-INDUCED
HYPERGLYCEMIC ALBINO MICE (*Mus musculus* L.)

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RIDGWAY B. ORAIS

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This thesis entitled "THE EFFECTS OF TAHITIAN NONI (*Morinda citrifolia*, Rubiaceae) JUICE ON THE BLOOD GLUCOSE LEVEL OF ALLOXAN-INDUCED HYPERGLYCEMIC ALBINO MICE (*Mus musculus* L.)", prepared and submitted by RIDGWAY B. ORAIS in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE IN BIOLOGY, has been examined and is recommended for acceptance and approval for ORAL EXAMINATION.

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ABSTRACT

The hypoglycemic effect of orally administered Tahitian noni juice was determined in fifty four hyperglycemic albino mice. Fifty four albino mice were subject to acclimation to laboratory conditions for one week. The baseline blood glucose level was determined after twelve hours of fasting. Hyperglycemia was induced by injecting alloxan based on the body weights of the fifty four albino mice namro strain. Blood glucose was again determined after forty eight hours of inducing alloxan to all the mice and hyperglycemia was obtained. The fifty four albino mice was induced with their specific substance, the test group was administered with tahitian noni juice orally three times daily for seven days, the positive control group was injected with regular insulin intramuscularly and the negative control group was given with distilled water orally. Blood glucose levels were determined at 0, 2, 4, 6 hours after treatment in each of the treatment groups. Results showed the mean for the test group was increasing from 0, 2, 4, 6 hours with values from 172.60 ± 26.58 , 195.70 ± 26.27 , 230.60 ± 34.99 , 270.60 ± 41.19 respectively. The result of the mean blood glucose levels for the positive control group progressively decreased from 0, 2, 4, 6 hours after treatment with values from 175.90 ± 37.49 , 112.90 ± 13.90 , 96.78 ± 12.55 , 95.28 ± 15.36 . Blood glucose level was again determined in the test group after 0, 2, 4, 6 hours on the seventh day. Results showed the mean was increasing from 0, 2, 4, 6 hours with values from 180.89 ± 37.77 , 199.20 ± 55.25 , 276.0 ± 51.65 , 332.60 ± 50.39 which was higher compared to the results of the test group on day one. Results showed the mean of the negative control group progressively increased from 0, 2, 4, 6 hours after treatment with values from 221.90 ± 29.28 , 256.30 ± 42.14 , 301.0 ± 50.57 , 348.80 ± 54.19 respectively.

Based on the results obtained, the tahitian noni juice had a blood glucose lowering effect on the positive control group on the seventh day compared to the negative control, but does not show hypoglycemic effect.

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INTRODUCTION

A. Rationale

Noni (*Morinda citrifolia*) is a shrub or small tree, measuring 1 to 6 meter tall, with leathery, shiny dark green leaves and milky sap. The white flowers are arranged in ovoid heads. This plant grows close to the sea or along rivers in the lowlands. The plant has medicinal properties. Other Visayan names are amino, anino, asino, ilog-ilog, lino, nino and sikalig. Common name in the Philippines is bankoro, common name of the plant in English is Indian mulberry (Seidenschwarz 1994). Tahitian Noni® (*Morinda citrifolia*) juice processed from its fruit is manufactured by Morinda Incorporated of the United States of America. Their sales have been increasing in the market due to its medicinal effects claimed by people who were using the noni juice. Some who have orally taken Tahitian Noni juice also claimed that it has an effect on some of their ailments including hyperglycemia. These claims are based only on anecdotal testimonies and not on laboratory investigation or research findings that will prove its effectiveness. Thus, this study was conducted to find out if the Tahitian Noni juice could significantly lower blood glucose level.

B. Review of Related Literature

Noni (*Morinda citrifolia*) fruit has extraordinary healing properties that most North Americans have never heard of. It's been successfully used for over 2,000 years in Polynesia, China, India and elsewhere. Noni fruit was brought by the inhabitants to the South Pacific islands such as Tahiti, Hawaii, Malaysia and also the Philippine islands