THE PREVENTIVE POTENTIAL OF NATURAL GREEN TEA DECOCTION VERSUS COMMERCIAL GREEN TEA ON ALCOHOLIC LIVER DISEASE IN ALBINO RATS

(*Rattus norvegicus)*

An Undergraduate Thesis Presented to
the Faculty of the Biological Sciences Department
College of Science
De La Salle University-Dasmariñas
Dasmariñas, Cavite

In Partial Fulfillment of the Requirements
for the Degree of Bachelor of Science Major in Human Biology

ACE L. MASIKAT
PAMELA ANNE M. VILLAR

February 2007

ABSTRACT

Alcohol intake has become one of the leading causes of liver damage resulting to alcoholic liver disease. Blood contains the enzymes alanine amino tansferase (ALT) and aspartate amino transferase (AST) upon which the levels rise in the presence of liver damage. There have been numerous methods offered to counteract alcohol's effect on the body, one method of which is green tea intake. Green tea contains antioxidants that have been said to have a curative effect on liver damage and lower the expected rise in ALT and AST. In this study, 36 male albino rats divided into four test groups were acclimatized for two weeks. Each organism was subjected to cardiac puncture to procure samples for the Spinreact™ kit to determine the normal AST and ALT levels of rats. A spectrophotometer was used to read to absorbance of each sample. After the two-week period, the first group, T0-, which was composed of 9 rats, served as the control group and normal feeding was maintained. In the second group, T0+, liver damage was induced by administering ethanol daily for also two weeks. The third and fourth groups were also administered with ethanol; however dosages of natural and green tea were used as treatments that were expected to maintain low levels of ALT and AST. After the mentioned allotment of time, blood samples were once again taken to determine whether the two preparations of green tea had a curative potential and find out which preparation was more effective. The rats were then sacrificed in order for their livers to be removed and weighed, to resolve whether liver weight was significant in liver damage. One-way Analysis of Variance (ANOVA) and the Tukey Method were employed to compute for the gathered average ALT values of -0.0030, 0.3560, 0.0745, and 0.0854 (in order of the four treatments) were obtained, as a result of the difference between the initial and final extraction. The AST levels on the other hand were 0.0041, 0.4208, 0.2149, and 0.2818 respectively. Based on statistical data, both ALT and AST were indicators of liver damage. Natural and commercial green tea were both effective in maintaining low ALT and AST levels, however, the latter provided more highly significant results. Liver weight did not show any significance as an indication of liver damage.

TABLE OF CONTENTS

Title Page	1
Approval Sheet	2
Abstract	3
Acknowledgement	4
Table of Contents	5
List of Tables	7
List of Figures	8
CHAPTER 1 INTRODUCTION	
1.1 Background of the Study	9
1.2 Conceptual Framework	10
1.3 Statement of the Problem	11
1.4 Hypotheses	11
1.5 Scope and Limitations	12
1.6 Significance of the Study	13
1.7 Definitions of Terms	13
CHAPTER 2 LITERATURE REVIEW	
2.1 Conceptual Literature	15
2.2 Related Studies	27
CHAPTER 3 METHODOLOGY	

3.1 Research Design 35

3.2 Research Setting 35

3.3 Research Procedure 35

3.4 Data Gathering and Statistical Analysis 39

CHAPTER 4 RESULTS AND DISCUSSION

4.1 Results 40

4.2 Discussion 42

CHAPTER 5 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary 44

5.2 Conclusion 45

5.3 Recommendations 46

References 47

APPENDICES

A. Standard Procedure 52

B. Raw Data 53

C. Figures 60

D. Photodocumentation 62

E. Curriculum Vitae 68

LIST OF TABLES

Table 4.1 ALT (Alanine amino transferase) levels in the four different treatments in albino rats

Table 4.2 AST (Aspartate amino transferase) levels in the four different treatments in albino rats

Table 7.1 Raw data of initial and final ALT values

Table 7.2 Raw data of initial and final AST values

Table 7.3 One Way Analysis of Variance for ALT

Table 7.4 One Way Analysis of Variance for AST

Table 7.5 Multiple Comparison of AST Levels using Tukey Method

Table 7.6 Multiple Comparison of ALT Levels using Tukey Method

LIST OF FIGURES

Figure 4.1 Average liver weights in the four different treatments in albino rats

Figure 7.1 ALT levels in the four different treatments in albino rats

Figure 7.2 AST levels in the four different treatments in albino rats

Figure 7.3 Average liver weights in the four different treatments in albino rats

AKLATANG EMILIO AGUINALDO - INFORMATION RESOURCE CENTER
De La Salle University-Dasmariñas • Since 1977 • Dasmariñas, Cavite, Philippines