

**THE INFLUENCE OF *Nigella sativa* BREW
ON CHOLESTEROL LEVEL**

by

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A thesis submitted in partial fulfillment of the requirement for the degree of

Master of Science

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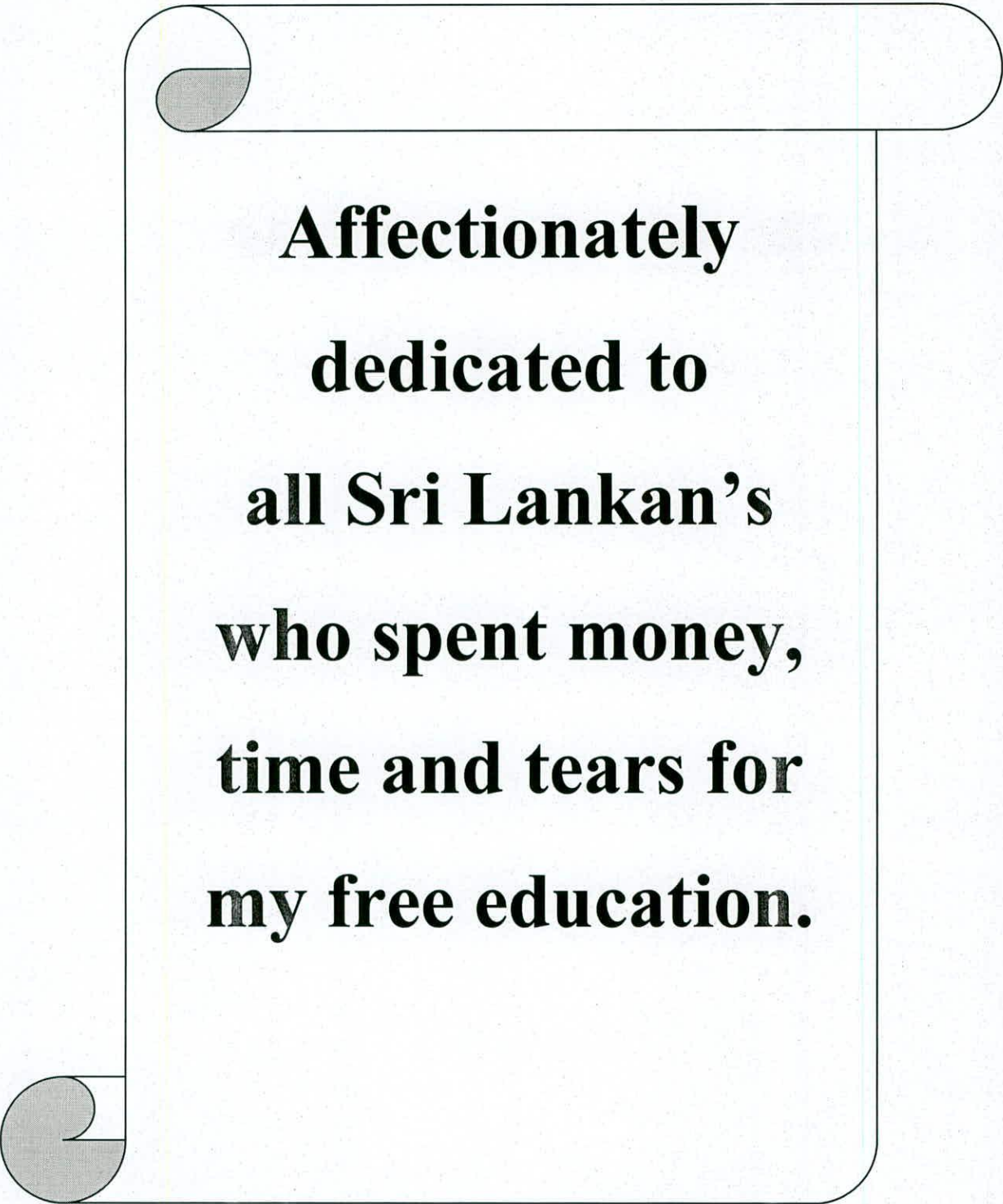
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**Affectionately
dedicated to
all Sri Lankan's
who spent money,
time and tears for
my free education.**

DECLARATION

The work described in this thesis was carried out by me under the supervising of Dr Jagath wansapala, senior lecture, Department of Food Sciences & Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Sri Lanka, A report on this has not been submitted in whole or in part to any University or any other institution for another degree / Diploma.

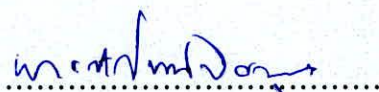
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I, Dr. Jagath Wanshapala hereby certify that the statement in the preceding page made by the candidate is true and that this thesis is suitable for submission for the university for the purpose of evaluation.

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ABBREVIATIONS

HDL	High density lipoprotein
LDL	Low density lipoprotein
TC	Total cholesterol
TG	Triglyceride
TQ	Thymoquinone
EAC	ehrlich ascites carcinoma
DLA	Daltons lymphoma ascites
GI	Gastro intestinal
NCD	Non Communicable disease
COPD	chronic obstructive pulmonary disease
NS	<i>Nigella sativa</i>
VLDL	very low density lipoproteins
DL	deciliter

THE INFLUENCE OF *Nigella sativa* BREW ON CHOLESTEROL LEVEL

By V. Weeramuni

ABSTRACT

Nigella sativa is one of the popular herbal spices around the world. There are lot of research findings show, that this herbal spice contains a large amount of very important active chemical ingredients. These ingredients may positively affect on the lipid profile of a healthy person. Excessive amount of cholesterol and related compounds (i.e. LDL and Triglyceride) may increase in human blood serum due to various metabolic constrained. Cardiovascular diseases mainly based on this factor. There are certain possibilities use of plants origin medicine or plant origin food to improve the total lipid profiles.

The study was focused to determine the impact of a *Nigella sativa* brew (5g powder) on the lipid profile of human blood serum.

The prepared drug was given to the 15 selected patients who were suffering from the blood cholesterol related problems for three consecutive months and the monthly lipid profile report of them were collected. There for this study suggests that drinking of *Nigella sativa* brew may improve the total lipid profile.

The HDL, LDL and TG levels of the patients were statistically analyzed. The result reveals that the *Nigella sativa* has significant effect on decrease of LDL and TG level and increase of HDL of human blood serum.

CHAPTER 1

INTRODUCTION

Non-communicable diseases (NCDs), also known as chronic diseases, are not passed from person to person. They are of long duration and generally slow progression. The four main types of non-communicable diseases are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes (Ahmad, 2013).

Cardiovascular diseases are largest fraction of deaths related to non-communicable diseases, followed by cancer, chronic obstructive pulmonary disease (COPD), and diabetes (Ahmad , 2013).

Atherosclerosis is a type of arteriosclerosis. It's the term for the process of fatty substances, cholesterol, cellular waste products, calcium and fibrin (a clotting material in the blood) building up in the inner lining of an artery. The buildup that results is called plaque (Geng , 2005).

Arteriosclerosis is a general term for the thickening and hardening of arteries. Some hardening of arteries normally occurs when people grow older. Plaque may partially or totally block the blood's flow through an artery. If either of these occurs and blocks the whole artery a heart attack or stroke may result (Geng, 2005).

Atherosclerosis is a disease characterized by deposition of a fatty material on the walls of the arteries. This material consists essentially of cholesterol, triglyceride fats, fibrous and red blood cells. As the deposit continues to build it restricts blood flow through the artery. When the coronary artery is involved Myocardial Infarction MI and death may follow. Cholesterol is present in animal cell membranes in the free form or un-esterified form and it is an important constituent of lipoproteins (Mc Donald, 1997).

Coronary thrombosis refers to the presence of a blood clot in the coronary artery that blocks the normal flow of blood to the heart. Thus atherosclerosis can contribute to a coronary thrombosis by narrowing the lumen of the coronary artery, so that a clot is more likely to exert a blockage (Geng, 2005).

Elevated cholesterol concentrations are a major contributing factor in the development of atherosclerosis. Cholesterol enters the circulation from two major sources, absorption from food the exogenous pathway, and synthesis by the liver the endogenous pathway. Under most circumstances the latter pathway is the most significant. (McDonald, 1996.)

Cholesterol is taken up by the liver from the circulation to form bile acid or is taken up by the cells, either to form steroid hormones or is to be inserted in to and be a part of membranes. Clinical studies demonstrate the feasibility of lowering cholesterol with diet and treatment with drugs. Antioxidants have positive influences on cholesterol in our blood stream by increasing the levels of the HDL cholesterol and decreasing the levels of the LDL cholesterol.

Certain antioxidants also improve blood flow through already diseased coronary arteries by both dilating these arteries to provide better flow to the heart muscle as well as minimizing blood clotting in this disease narrowed blood vessels. (Wikramanayake, 1997).

Cholesterol cannot travel alone through the blood stream. It has to combine with certain proteins. These proteins act like trucks, picking up the cholesterol and transporting it to different parts of the body. When this happens, the cholesterol and protein form a lipoprotein together. The two most important types of lipoproteins are high-density lipoproteins (HDL) and low-density lipoproteins (LDL) (Wildman, 2011)

Foods with plant origin as well as medicine may directly and indirectly effect on the control of blood cholesterol. As one of the natural spices *Nigella sativa* plays an important role controlling the blood cholesterol level (Dahri, 2005).

According to the Prophet Mohammad repeatedly said that seeds of the black cumin plant could cure anything but death itself. The seeds of the black cumin plant contain over 100 chemical compounds, including some yet to be identified. The primary active ingredient is crystalline nigellone, In addition black cumin seeds contain: thymoquinone, β -sitosterol, myristic acid, palmitic acid, palmitoleic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, arachidonic acid, protein, vitamin B₁, vitamin B₂, vitamin B₃ and folic Acid. (Dahri, 2005).

It has been suggested that black seed could be effectively used to treat hypertension. Another study reported that the oral treatment of human with black seed powder decreased serum cholesterol, triglyceride, glucose level, leucocytes and increase platelet counts. (Kasule ,1993).

Objectives of the Study

- **Major objective**

Determination of the impact of Black cumin seed (*Nigella sativa*) on blood cholesterol level of human lipid profile.

- **Miner objectives**

Determination of impact of Black cumin seed (*Nigella sativa*) on HDL level of human Lipid Profile

Determination of impact of Black cumin seed (*Nigella sativa*) on LDL level of human Lipid Profile

Determination of impact of Black cumin seed (*Nigella sativa*) on Triglyceride Level of human Lipid Profile