THE EFFICACY OF HOMOEPATHIC SIMILLIMUM TREATMENT IN PATIENTS WITH HYPERCHOLESTEROLAEMIA IN TERMS OF THE MAJOR CHOLESTEROL LIPOPROTEINS IN THE BLOOD

ROBERT STOREY

Dissertation submitted in partial compliance with the requirements for the Master's degree in Technology in the department of Homoepathy at Technikon Natal

I, Robert Storey, do hereby declare that this dissertation represents my own work in both conception and execution

Robert Storey

APPROVED FOR FINAL SUBMISSION

Supervisor : Dr.F.J. Burger M.Sc.(Physiol) (U.S.)
DSc. (Physiol) (U.S.)
DSc. (Biochemistry) (P.U.)

Durban
Date of Submission : 17/05/2000

I DEDICATE THIS STUDY TO MY PARENTS

THANK YOU FOR ALL THE LOVE, SUPPORT AND ENCOURAGEMENT THROUGHOUT MY LIFE.

ACKNOWLEDGEMENTS

The auther wishes to express his thanks and appreciation to the following people:

Dr.F.J. Burger for all his help as my supervisor.

Dr.C.M. Hall for her help as my co supervisor.

Mrs S. Brecher for drawing of the blood and administration work.

Sister L.Haskins for helping with the drawing of the blood.

Dr. S. De la Rouvierre for helping with the case analyses.

Dr. M. Armbruster for the use of his rooms.

Dr. R. Mostert for the use of her computer.

Mr.N.Worku for his help with the statistics.

ABSTRACT

The purpose of this study was to investigate the efficacy of homoeopathic simillimum treatment in patients with hypercholesterolaemia in terms of the major cholesterol lipoprotein fractions in blood. The desired outcome was to be a lowering of the total cholesterol (TC) and low-density lipoprotein cholesterol (LDL) levels as well as an increase in the high-density lipoprotein cholesterol (HDL) level.

Advertisments were placed in a local newspaper and on the internal e-mail system at Technikon Natal. Participants were chosen provided that they had an elevated cholesterol level. Thirty participants were chosen and randomly divided into the placebo or experimental group. This was a double blind study with the medicine being dispensed by an independent dispenser. Simillimum treatment was based on homoeopathic principles and each case was supervised as to the possible correct selection of the simillimum. Blood samples were obtained before treatment began and the patients then returned for assessment at 4 weeks, 8 weeks and at 12 weeks. Blood samples were obtained during each consultation. Participants were asked not to change their diets and lifestyles for the duration of the trial as these factors may influence the results.

All the data obtained by the researcher from the laboratory results was analysed by means of parametric statistical tests, since the three variables of study are continuous and continuous variables should be analysed using

parametric methods, regardless of the small sample size per group. The Two sample unpaired t-test was used to compare the experimental group and placebo group with respect to each variable of study. The decision rule states that the null hypothesis is rejected at the α=5% level of significance if $p \leq \alpha$ where p is the observed significance level or p-value. The study showed that $p \geq \alpha$ in all the variables of study indicating that all the group means were equal. There was no significant difference between the experimental and placebo groups with respect to the total cholesterol (TC) level, high density lipoprotein (HDL) level and the low density lipoprotein (LDL) level.

For a comparison between related samples within the experimental group, the Two-sample paired t-tests were used. The null hypothesis states that there is no significant improvement between the 2 related samples being compared, at the α level of significance. The study showed that for the experimental and placebo groups $p \geq \alpha$, therefore indicating that there were no significant improvements between successive consultations.

Three visual summaries of analytical findings was given by the use of barcharts to compare the experimental and placebo groups with respect to the 3 variables of study.

This trial has shown that homoeopathic simillimum treatment of hypercholesterolaemia was of no statistical significance and it highlights the

need for further research in this field. It is the researchers opinion that homoeopathic simillimum treatment of hypercholesterolaemia be used in conjunction with phytotherapy as well as behaviour modification in terms of diet and exercise.

DEFINITION OF TERMS

Atherosclerosis : a form of arteriosclerosis in which atheromas containing cholesterol, lipoid material and lipophages are formed within the intima and inner media of large and medium sized arteries (Saunders W.B. 1995 : 87).

CH : a potency preparation of 1 in 100 (Shravaka, 1991).

Dyslipidaemia : the presence of abnormal lipoproteins in the blood (Saunders W.B. 1995 : 263).

Hypercholesterolaemia : an excess of cholesterol in the blood (Saunders W.B. 1995 :393).

Ischemia : deficiency of blood in a part, usually due to functional constriction or actual obstruction of a blood vessel (Saunders W.B. 1995 : 428).

Lipoprotein : the form in which lipids are transported in the blood (Saunders W.B. 1995 : 461).

Simillimum treatment : is based on the principle " let likes be cured by likes "i.e. the same substance that causes a disease can cure it. Therefore homeopathic treatment consists of giving the patient in weak doses the substance which, if given to a healthy individual, would cause symptoms similar to the patients own pathological symptoms (Jouanny 1991).

Phytotherapy : a form of treatment that uses plants in a medicinal manner (Saunders W.B. 1995 : 635).

Cytotoxin : a toxin or antibody having a specific toxic action upon cells of special organs (Saunders W.B. 1995 : 214).

TABLE OF CONTENTS

DEDICATION ii

ACKNOWLEDGEMENTS iii

ABSTRACT iv

DEFINITION OF TERMS vii

CHAPTER 1 INTRODUCTION 1

CHAPTER 2 REVIEW OF THE RELATED LITERATURE 5

2.1 Introduction 5

2.2 LDL – Cholesterol 6

2.3 HDL – Cholesterol 7

2.4 Diet 8

2.5 Exercise 9

2.6 Treatment of hypercholestrolemia 10

2.6.1 Allopathic drug treatment 10

2.6.2 Homoeopathic treatment 12

CHAPTER 3 MATERIALS AND METHODS 15

3.1 Study design 15

3.2 Subjects 16

3.3 Treatment 17

3.1.1 Homoeopathic simillimum treatment 17

3.1.2 Placebo treatment 18

3.4 Measurement 19

3.5 Statistical procedure 19

CHAPTER 4 RESULTS 22

4.1 Total cholesterol levels.....22

4.2 HDL / LDL levels.....26

4.3 Initial / Final TC readings.....30

4.4 Graphical Representation of results.....31

4.5 Summary of patient profile.....33

CHAPTER 5 DISCUSSION.....34

CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS.....37

6.1 CONCLUSIONS.....37

6.2 RECOMMENDATIONS 38

REFERENCES.....39

LIST OF TABLES

TABLE 4.1.1 Total cholesterol levels – initial reading - Unpaired t - test 22

TABLE 4.1.2 The TC reading after 1 month of treatment unpaired t-test.....23

TABLE 4.1.3 The TC reading after 1 month of treatment unpaired t-test.....24

TABLE 4.1.4 The TC readings after 3 months of treatment unpaired t-test.....25

TABLE 4.2.1 Initial HDL / LDL reading – unpaired t-test.....26

TABLE 4.2.2 HDL / LDL readings after 1 month - Unpaired t-test.....27

TABLE 4.2.3 HDL / LDL readings after 2 months - Unpaired t-test.....28

TABLE 4.2.4 HDL / LDL readings after 3 months - Unpaired t-test.....29

TABLE 4.3 Paired t-test comparing initial/final TC readings.....30

TABLE 4.5 Summary of patient profile including remedies.....32

LIST OF FIGURES

FIGURE 1 Mean TC readings of treated and placebo groups taken before treatment and then on the 1st, 2nd and 3rd month.....31

FIGURE 2 Mean HDL readings of treated and placebo groups taken before treatment and then on the 1st, 2nd and 3rd month.....31

FIGURE 3 Mean LDL readings of treated and placebo groups taken before treatment and then on the 1st, 2nd and 3rd month.....32

FIGURE 4 Graph of age-specific action limits for TC, derived from the CORIS 20th and 80th percentiles for both sexes combined.....10

CHAPTER 1 INTRODUCTION

Hypercholestrolaemia is a major risk factor for the development of coronary heart disease (CHD) and early detection and management of hypercholesterolaemia could retard the atherosclerotic process (Primrose, et al, 1994). Clinical trials have shown that a 1% decrement in total cholesterol yields about a 2% reduction in CHD risk (Primrose et al. 1994). In a study conducted by (Anderson et al. 1987), cholesterol levels, in people under fifty years of age, are directly related to an increase of 5% in the overall death rate and an increase of 9% of CVD related deaths. Anderson et al. (1987) believes that there is a linear correlation between having a low cholesterol level and improved longevity under the age of fifty years.

According to (Vine, et al. 1998), early fatty streaks are characterised by the deposition of cholesterol and oxidation products (oxysterols). There is a linear correlation between serum cholesterol level increasing the degree of atherosclerosis, and a corresponding regression of the lesion with a decreasing cholesterol level (Ross, 1993). This condition is exacerbated by the presence of other risk factors such as hypertension, obesity, cigarette smoking and low levels of physical activity (Betteridge and Kahn, 1998 ; Fahey, 1998).

Rossouw et al. (1988), states that determination of low-density lipoprotein cholesterol (LDLC) may improve CHD prediction since it constitutes about two – thirds of the total cholesterol value. The relationship of LDL to Ischemic Heart Disease (IHD) is confounded by a rise in cholesterol as LDL increases (Isselbacher 1994 : 1111). On the other hand high-density lipoprotein (HDL) is thought to have an independent and inverse influence on CHD risk (Betteridge and Kahn, 1998 ; Rossouw et al . 1988.).

The National Cholesterol Education Programme (NCEP) recommends that treatment decisions be based on the derived level of LDL (Berkow 1992 : 1040). Lipid lowering medication should only be considered if vigorous and persistent efforts at ameliorating the hyperlipidaemia by non-pharmacological means have failed to reduce the total cholesterol value to within an acceptable range (Rossouw et al, 1988). Isselbacher (1994: 1112) advises that a decision to start drug therapy should be made only after careful consideration as it commits patients to lifelong treatment.

Unwin et al, (1998) conducted a study on the implications of applying widely accepted cholesterol screening and management guidelines to a British adult population which concludes that none of the guidelines have addressed the economic and service consequences of their application as part of their development process and that there is a strong need for scientifically valid guidelines that include a consideration of cost.

From research evaluated, it becomes obvious that an alternative or supplementary method of treating hypercholesterolaemia would be beneficial, particularly if this treatment is simple for the patient to adhere to, does not have any undesirable side effects and is cost effective.

Joseph (1994) investigated the effect of Chelidonium 3x in the treatment of hypercholesterolaemia. An experimental group of 15 patients received Chelidonium 3x and a control group of 15 patients received placebo. The treatment period was 3 months with 3 consultations and at each consultation a blood sample was taken. It was found that Chelidonium improved the cholesterol readings by (p=0,046).

Gillespie (1994) investigated the efficacy of Cholesterolinum 9CH in the treatment of hypercholesterolaemic patients. Sixteen patients received Cholesterolinum 9CH while the other sixteen received placebo. The treatment period was 12 weeks with fasting blood samples being taken once every 4 weeks. This trial also proved to be stastistically significant showing a 3.3% improvement in the average total cholesterol levels of the treatment group with a p value of p=0.004.

In another clinical trial Hillerman (1996) investigated the efficacy of Taraxacum 5CH in the treatment of hypercholesterolaemic patients. Twenty three participants received Taraxacum 5CH while 18 participants received placebo. The treatment period was 3 months with patients returning every month for a

consultation during which a blood sample would be taken. On comparing the beginning and end readings, both the total cholesterol and the LDL levels showed a decrease that was stastistically significant.

A search of the indices of Hom-Inform Database, the British Homeopathic Journal 1982-1998 and Medline 1994-1998 reveals that no research on the effectiveness of simillimum treatment of patients with hypercholesterolaemia has been conducted. The need for further homoepathic research is great when compared to the amount of research that has been conducted and is continually being conducted on allopathic treatment regimes.

It is clear from the above, that research into simillimum treatment (the fundemental law on which homeopathy is based) of hypercholesterolaemia is required in order to evaluate the effectiveness of this form treatment on hypercholesterolaemia, specifically TC, LDL and HDL.

It is hypothesised that the homoeopathic simillimum treatment will cause a decrease in the total cholesterol levels and an increase in the ratio of high density / low density lipoprotein.

CHAPTER TWO : REVIEW OF THE RELATED LITERATURE

2.1 Introduction

There is extensive evidence that suggests there is an increased susceptibility of subjects with high blood cholesterol to develop clinically manifest coronary artery disease (CAD) (Goldbourt et al, 1993). In a thirty year follow up from the Framingham Study (Anderson et al. 1987) concluded that cholesterol reduction in individuals with " normal" values can lower the risk for cerebrovascular disease and death. According to Primrose et al, (1994), there is no population in whom CHD is common that does not have a relatively high mean concentration of total cholesterol.

In South Africa, coronary heart disease (CHD) along with the cerebrovascular diseases, is the main cause of death from circulatory disease among adults of all South African groups other than the black population (Bradshaw et al, 1992). On analysis of the CHD risk factor profile of South Africans, it is estimated that approximately 4.8 million South Africans aged 15-64 have hypercholesterolaemia, with the highest prevalence being among whites (Steyn et al, 1992). With statistics like these, the resulting strain on the economy through the cost of medication, disability compensation and loss of man hours, gives rise for concern (Rossouw et al, 1988).

2.2 LDL - Cholesterol

According to (Sacks et al, 1996), clinical trials have shown that lowering elevated levels of LDL cholesterol prevents both 1st and recurrent coronary events. The increase in mean LDL cholesterol with age observed in population based studies in the United States has been identified as a major factor in the development of athersclerosis and CHD (Colvin et al, 1994).

According to an article by (Ross, 1993) on the pathogenesis of atherosclerosis, LDL oxidation increases monocyte adherence, transmigration, and macrophage formation and activation which in turn results in lipid accumulation. Thus a decrease in the LDL level would minimise the intensity and frequency of the above processes and so retard the atherosclerotic processes.

Evidence from studies of non industrialised communities, in which little or no age associated increase of plasma LDL concentration has been observed, suggests that an effect of diet may be responsible for at least part of the age associated increase which occurs in industrialised societies (Miller, 1984). He further states that a decline in LDL- C levels might possibly result from an interaction between age and an environmental factor or element of lifestyle, and is therefore potentially avoidable.

2.3 HDL - Cholesterol

A persons risk of having CHD develop is eight times greater if their serum HDL-C level is less than 0.9mmol/l (Gordon et al, 1977). Abnormalities of HDL, either with or without hypertriglycidaemia, are very common in individuals suffering from coronary artery disease (Tall, 1990).

HDL may be altered by a variety of factors. Some of the factors that result in increased HDL levels are exercise conditioning, alcohol intake, nicotinic acid, fibrates, phenytoin and estrogens (Tall, 1990). Decreased HDL levels result from a low fat diet, high polyunsaturated fat diet, obesity, esp. truncal, probucol, β-blockers, progestins, androgens and smoking (Tall, 1990).

Gordon et al. (1977) suggests that a person who is obese, has a high triglyceride level and is glucose intolerant is more likely to have a low HDL cholesterol level than a high one. Tall (1990), after having studied various theories on the inverse relationship between HDL-C and Coronary Artery Disease (CAD), states that it is likely that HDL-C is associated with protection against CAD because HDL levels indicate the efficiency of reverse cholesterol transport in subjects with normal or increased LDL levels, and this process is involved in the removal of cholesterol from atheromata and or because HDL acts as a marker of atherogenic chylomicron and LDL remnant accumulation. However, Tall (1990) further states that each intervention affecting HDL will

have to be prospectively evaluated on its own merits. Gordon et al ,(1977) suggests that HDL-C is an important index to the risk of CHD at all ages and that it should be added to the usual risk profile of CHD.

2.4. Diet

The NCEP recommends that when LDL is greater then 130md/dL, a diet low in total saturated fat and cholesterol is the basis of treatment and when the LDL levels remain between 130 and 160mg/dL and the patient has 2 or more CAD risk factors or has CAD, or the LDL levels remain greater than 160mg/dL, drug treatment in addition to diet should be considered (Berkow 1992 : 1040,1043).

In a study to determine the relationship between the sensitivity to dietary fat and dietary cholesterol, Clifton et al (1990) established that individuals who are found to be hypercholesterolaemic but clearly responsive to a prudent diet (low saturated fat, low cholesterol) should avoid dietary cholesterol. On the other hand, normocholesterolaemic subjects appear less responsive to dietary cholesterol, and the need to restrict dietary cholesterol is less obvious (Clifton et al, 1990).

Deposition of cholesterol and cholesterol oxidation products (oxysterols) give rise to the formation of early fatty streaks and advanced lesions and they have

been shown to be cytotoxic and pro-atherogenic compared to cholesterol (Vine et al,1998). The oxysterols are found in cholesterol rich processed foods (Vine et al,1998). It is therefore conceivable that oxidised cholesterol products in arterial lesions are partly derived from dietary sources. Kasim, et al.(1993) conducted a study investigating dietary and anthropometric determinants of plasma lipoproteins during a long-term low-fat diet. It was concluded that there was a decrease in TC, HDL and LDL levels, however, his findings also suggest that long term nutritional regulation of plasma lipoprotein metabolism may differ from that in the short term.

In a study to compare the plasma lipids and lipoproteins in vegetarians and controls, Sacks et al(1975), found that the levels of the plasma lipids and lipoproteins were significantly lower in the vegetarians when compared to the control. Because of the varied response of individual cholesterol levels to diet, diet alone may serve as an adequate form of treatment to some while to others it will not. The participants in this study were asked not to change their dietary and lifestyle habits for the duration of the trial.

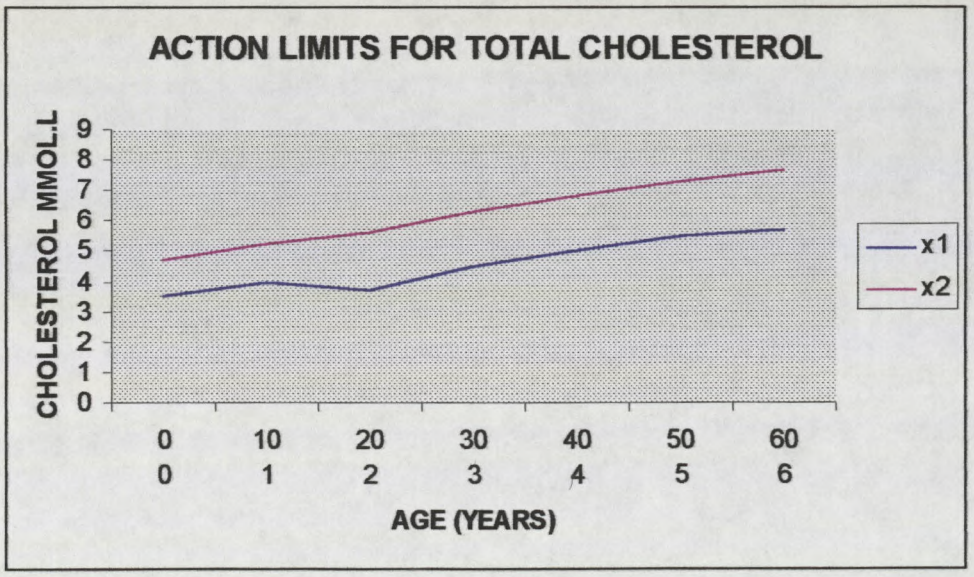
2.5 Exercise

According to Berkow (1992: 1040), HDL levels are positively correlated with exercise and inversely related to obesity. In a study conducted only on women, Taylor and Ward (1993), suggests that higher levels of HDL-C in women of all ages may be associated with regular exercise and that the

volume of exercise may be more important than the intensity. Pamela et al (1993) further suggests that exercise can modify the lipid profile in a desirable manner (increase HDL level and decrease the TC/HDL-C ratio) in mixed groups of men and women and it therefore may be important as a treatment for dyslipidaemia as well as a public health measure to reduce CHD medicine. Although the data read so far suggests that exercise plays an important role in cholesterol reduction, participants in this trial were not informed on the role exercise in cholesterol reduction.

2.6. Treatment of hypercholesterolaemia

2.6.1 Allopathic drug treatment



Area below x1 = desirable level
Area between x1 and x2 = moderate risk
Area above x2 = high risk

Fig.4. Graph of age-specific action limits for TC, derived from the CORIS 20th and 80th percentiles for both sexes combined.

Drug therapy is recommended by the NCEP for any adult patient whose LDL cholesterol level remains greater than 4.9 mmol/L or greater than 4.1 mmol/L in the presence of two or more risk factors after an adequate trial of at least 3 months of diet therapy alone. A decision to begin drug therapy should be made only after careful evaluation since it usually commits patients to lifelong treatment (Isselbacher 1994 : 1112). Berkow (1992 :1043) suggests that diet changes should be tried for at least six months before considering drug treatment if the TC level is less than 240mg/dL and the LDL level is less than 160mg/dL.

Drug treatment lowers lipid levels by several known mechanisms :

1) Bile acid sequestrants. These act by binding bile acids in the intestines and by interrupting enterohepatic circulation of bile acids. Side effects include constipation, abdominal pain, nausea, bloating, drug interactions (Berkow 1992 : 1045 , Isselbacher 1994 : 1113).

2) 3-Hydroxy-3-methylglutaryl coenzyme A reductase inhibitors. These competetively inhibit the early stage of cholesterol biosynthesis (Berkow 1992 : 1045 ,Isselbacher 1994 : 1113). Side effects include hepatitis, myositis, rhabdomyolysis and an increase of hepatic enzymes (Wierzbicki et al.1998).

3) Nicotinic acid derivatives. These drugs act by inhibiting lipolysis in adipocytes and inhibits hepatic triglyceride production. VLDL synthesis is thus decreased. Side effects include hepatitis, gout, hyperglycemia, ulcerogenesis and icthyosis (Berkow 1992 : 1045 , Isselbacher 1994 : 1113).

4) Fibric acid derivatives. These increase the activity of lipoprotein lipase

thereby lowering TG and raising HDL levels. Side effects include cholelithiasis, hepatitis, decreased libido, myositis, ventricular arrhythmia, abdominal pain and nausea. (Berkow 1992 : 1045 , Isselbacher 1994 : 1113).

5) Probucol. Side effects include low HDL, diarrhoea, bloating, nausea and abdominal pain (Berkow 1992 :1045).

Although the allopathic drug treatment of hypercholesterolaemia may markedly lower cholesterol levels, the severe side effects and cost of the medication provides enough reason for alternative forms of treatment to be found.

2.6.2 Homeopathic treatment

Homeopathic treatment is based on the principle " let likes be cured by likes "i.e. the same substance that causes a disease can cure it. Therefore homeopathic treatment consists of giving the patient in weak doses the substance which, if given to a healthy individual, would cause symptoms similar to the patients own pathological symptoms (Jouanny 1991).

According to Hahnemann (1994 : 106) the sum of all the symptoms and conditions in each individual case of disease must be the sole indication, the sole guide to direct us in the choice of the remedy. This means that we are all different and our bodies will react differently to the same diseases, thus the same single remedy will not be given for the same clinical diagnosis.

According to Shravaka (1991), the cardinal point of difference between homeopathy and other systems lies in the application of remedies to sick patients in a "specialised" way. This implies : 1) The use of remedies whose properties and attributes have been previously ascertained through drug provings. Hence empericism, opinion and conjecture have little place in homeopathic therapeutics. (2) The use of a single remedy at a time, as the drug provings have been so conducted. Polypharmacy, therefore is irrational and unphilosophical. (3) The use of the small dose.

Based on the above homeopathic principles, each patient's case would be supervised as to the correct selection of the simillimum. The simillimum will be selected based on the totality of symptoms presented by the patient . The symptom picture of the patient will be matched with the symptom picture of a remedy selected from the Materia Medica in order to give the most similar prescription.

Joseph (1994) investigated the effect of Chelidonium 3x in the treatment of hypercholesterolaemia. It was found that Chelidonium improved the cholesterol readings by 2.7% in the experimental group while a 0% decrease was calculated in the control group. Gillespie (1994) investigated the efficacy of Cholesterolinum 9CH in the treatment of hypercholesterolaemic patients. This trial also proved to be stastistically significant showing a 3.3% improvement in

the average total cholesterol levels of the treatment group. In another clinical trial Hillerman (1996) investigated the efficacy of Taraxacum 5CH in the treatment of hypercholesterolaemic patients. On comparing the beginning and end readings, both the total cholesterol and the LDL levels showed a decrease that was stastistically significant.

The researcher has found no clinical trials on the homoeopathic simillimum treatment of hypercholesterolaemia and will thus endeavour to determine whether this form of treatment is effective in reducing high cholesterol.

CHAPTER 3 MATERIALS AND METHODS

3.1. STUDY DESIGN

Advertisments were placed in a local newspaper requesting the participation of people in a clinical trial involving the treatment of hypercholesterolaemia with homeopathic treatment. Advertisments were also placed in the internal e-mail at Technikon Natal.

Respondents were screened using a Boerhinger Mannheim Reflotron Photometer MK IV and those persons falling within the " medium" and "high" risk categories were asked to participate in the trial. Participants were screened using as a reference a graph of age specific action limits for TC recommended by the Heart Foundation of Southern Africa (Rossouw et al . 1988).

Patients were selected by means of convenience sampling. A minimum of 30 patients was selected for this research. Patients were randomly divided into two groups (simillimum and placebo) in such a way that each patient had equal opportunity of being selected for either group. Pieces of paper labelled with placebo or experimental group were placed in a box and patients were assigned into groups according to the paper drawn. Each participant was asked to complete an informed consent form (Appendix A) stating that their participation in the research was of their own free will and that they could withdraw from the

study at any time and without explanation.

The initial consultation was comprised of a full case history (Appendix B) after which a physical examination was performed. Patients were advised that they would be divided by a random list into either the experimental or placebo group and that as it was a double blinded study, neither the researcher nor the patient would know who was in either group. Following the initial consultation, the patients had their initial blood sample taken after which they received their medication. Participants were seen every 4 weeks for a period of 12 weeks During the follow-up consultations a blood sample would be taken and the researcher would determine if there was any improvement and prescribe more medication. All of the blood samples were analysed in the same laboratory thus ensuring that the same apparatus and methodology was used on each blood sample that was tested.

3.2 SUBJECTS

All of the participants in the study came from advertisements that were placed in a local newspaper and from the internal e-mail facility at Technikon Natal. Thirty four people were accepted to participate in the trial of which only thirty completed the trial since four participants withdrew.

All the participants fulfilled the criteria for admissibility to the study as they all fell within the "medium" and "high" risk categories according to a graph of age specific action limits for TC recommended by the Heart Foundation of Southern

Africa.

Exclusion criteria for the trial included patients undergoing long term prescription drug treatment for cholesterol lowering purposes and pregnant women. Factors of lifestyle and diet were excluded in this trial as a change in these factors could possibly change the cholesterol levels of the participants. These factors were assumed to remain constant in that participants were asked not to change their diets or lifestyles during the treatment period.

3.3 TREATMENT

3.3.1 HOMOEOPATHIC SIMILLIMUM TREATMENT

All of the medication that was used during the trial came from a complete homoeopathic dispensary at the Homoeopathic Day Clinic at Technikon Natal. The medication was prescribed in powder form and taken via the oral route where it was to be dissolved under the tongue. Patients were instructed to take the medication as prescribed by the researcher. There was no time allocation or standardisation on potency for the medication as it varied for each individual patient. An independent dispenser administered the simillimum or placebo treatment to each patient.

Simillimum treatment was based on homeopathic principles and each case was supervised as to the correct selection of the simillimum. The simillimum was

selected based on the totality of the symptoms presented by the patient which was elicited by a careful and extensive case history taken by the researcher. The symptom picture of the patient was matched with the symptom picture of a remedy selected from the Materia Medica in order to give the most similar prescription. The independent dispenser was given a script for the simillimum and then the placebo or simillimum was made up according to the list that was previously drawn up. As it was a double-blinded study, neither the researcher nor the patients were aware of who was in the placebo or experimental groups.

3.3.2 PLACEBO TREATMENT

The medication in this group would look identical to the medication of the experimental group except that there was no active ingredient contained within the medication. The placebo medication was in the form of neutral powders which were prepared from sacchrum lactis. The preparation of the placebo medication by the independent dispenser was to be the same as that of the experimental groups medication but the medication contained placebo medicine instead of the patients real medication. The researcher instructed the participants in the placebo group to take the medication in the same manner as the experimental group.

3.4 MEASUREMENT

First consultation : A comprehensive homeopathic case was taken based on homeopathic principles. Venipuncture was carried out by a qualified nurse to obtain serum blood samples in venoject tubes. All of the blood samples were tested in the same laboratory according to the same method to ensure uniformity of apparatus and analysis techniques. The blood samples were enzymatically analysed using Boerhinger Mannheim test kits and methodology.

The patients were administered a single powder, with either the simillimum or the placebo treatment, only after the first blood sample had been taken. The patients returned for assessment at 4 weeks, 8 weeks and at 12 weeks. Blood samples were obtained during each consultation.

3.5 STATISTICAL PROCEDURE

There was 3 continuous variables of study : (1) Total cholesterol level (2) HDL (3) LDL. There was 4 consultations per variable of study in each of the 2 groups.

The use of parametric tests for statistical data analysis :
All 3 variables of study were continuous. Continuous variables should be analysed using parametric methods , regardless of the small sample size per group. Hence, parametric methods was to be used for data analyses. Examples

of parametric tests are the two-sample unpaired and paired t-tests.

Procedure 1 : Comparison between experimental and placebo groups.

Two sample unpaired t-tests was used to compare groups 1 and 2 with respect to each variable of study. In each test, the null hypothesis states that there is no significant difference between groups 1 and 2 with respect to the variable in charge, at the α = 0.05 % level of significance. The alternative hypothesis states that there is a significant difference. 95% Confidence intervals were to be constructed for the true differences between group means.

Decision rule :

The null hypothesis is rejected at the α level of significance if $p \leq \alpha$ where p is the observed significance level or p-value. Otherwise, the null hypothesis is accepted at the same level.

Procedure 2 : Comparison between related samples within experimental group.

Two-sample paired t-tests was used to compare results from related samples within each group1. In each test, the null hypothesis states that there is no significant improvement between the 2 related samples being compared, at the α level of significance. The alternative hypothesis states that there is a significant improvement. 95% Confidence intervals for the true differences between group means were constructed.

Decision rule:

The null hypothesis is rejected at the α level of significance if $p \leq \alpha$ where p is the observed significance level or p-value. Otherwise, the null hypothesis is accepted at the same level.

Procedure 3: Comparison between related samples within placebo group

Procedure 2 was repeated within the same decision rule.

Procedure 4 : Comparison using barcharts

Visual summaries of analytical findings will be given by use of barcharts to compare the experimental and placebo groups with respect to the 3 variables of study.

The statistical package SPSS was used for data entry and analysis (Portney and Watkins 1993 : 656-663).

CHAPTER 4 RESULTS

4.1 TOTAL CHOLESTEROL LEVELS

TABLE 4.1.1 : Total cholesterol levels - initial reading – unpaired t-test.

GROUP	M	95%CI	SD	P
Experiment	6.564	-.825 ; 1.476	1.451	.505
Placebo	6.238	-.825 ; 1.477	1.621	.505

M = Mean total cholesterol level
CI = Confidence level
SD = Standard deviation
p = Computed p-value

The computed statistics indicate that there is no significant difference between the experimental and placebo groups.

TABLE 4.1.2 : The TC reading after 1 month of treatment – unapired t-test.

GROUP	M	95%CI	SD	P
Experiment	6.181	-1.506 ; .796	1.296	.307
Placebo	6.536	-1.510 ; .799	1.747	.307

M = Mean total cholesterol level
CI = Confidence interval
SD = Standard deviation
p = Computed p-value

The computed statistics indicate that there is no significant difference between the experimental and control groups.

TABLE 4.1.3 : The TC readings after 2 months of treatment – unpaired t-test.

GROUP	M	95%CI	SD	P
Experiment	6.308	-1.264 ; 1.049	1.297	.542
Placebo	6.415	-1.268 ; 1.053	1.759	.542

M = Mean total cholesterol level
CI = Confidence interval
SD = Standard deviation
p = Computed p-value

The analysis of results shows that there is no significant diferrence between the experimental and placebo groups.

TABLE 4.1.4 : The TC readings after 3 months of treatment – unpaired t-test.

GROUP	M	95%CI	SD	P
Experiment	6.385	-1.523 ; .783	1.443	.940
Placebo	6.755	-1.524 ; .784	1.634	.940

M = Mean total cholesterol level
CI = Confidence interval
SD = Standard deviation
p = Computed p-value

The results show that there is no significant difference between the experimental and placebo groups.

4.2 HDL/LDL LEVELS.

TABLE 4.2.1 : Initial reading – unpaired t-test.

	HDL				LDL		
GROUP	M	95%CI	SD		M	95%CI	SD
Experiment	1.166	-.241 ; .311	0.46		4.9	-1.021 ; 1.474	1.538
Placebo	1.131	-2.45 ; .315	0.247		4.674	-1.022 ; 1.475	1.788

M = Mean HDL/LDL level
CI = Confidence Interval
SD = Standard deviation

The analysis of results shows that there is no significant difference between the experimental and placebo groups with regards to the HDL and LDL values.

TABLE 4.2.2 : The HDL/LDL readings after 1 month – unpaired t-test.

	HDL				LDL		
GROUP	M	95%CI	SD		M	95%CI	SD
Experiment	1.176	- ,202; .341	.486		4.487	-1,170 ; .743	1.38
Placebo	1.107	- .21 ; .349	- 165		4.97	- 1,715 ; .747	1,864

M = Mean HDL/LDL level
CI = Confidence Interval
SD = Standard deviation

The results indicate that there is no statistically significant difference between the placebo and experimental groups.

TABLE 4.2.3 : The HDL/LDL readings after 2 months – unpaired t-test

	HDL				LDL		
GROUP	M	95%CI	SD		M	95%CI	SD
Experiment	1.148	- .280 ; .214	.401		4.566	-1,572 ; .654	1.494
Placebo	1.181	- .283 ; .217	.241		5.026	- 1,579 ; .660	1,684

M = Mean HDL/LDL level
CI = Confidence Interval
SD = Standard deviation

The results indicate that there is no statistically significant difference between the placebo and experimental groups.

TABLE 4.2.4 : The HDL/LDL readings after 3 months – unpaired t-test.

	HDL				LDL		
GROUP	M	95%CI	SD		M	95%CI	SD
Experiment	1.222	- .202 ; .352	.462		4.67	-1,857 ; 0.524	1.494
Placebo	1.147	- .206 ; .356	.248		5.338	- 1,858 ; .524	1,684

M = Mean HDL/LDL level
CI = Confidence Interval
SD = Standard deviation

The results indicate that there is no statistically significant difference between the placebo and experimental groups.

TABLE 4.3 : Paired t-test comparing initial/final TC readings.

GROUP	M	SD	95% CI	t	P
Experiment	.179	1.975	- .9114 ; 1.273	0.351	.730
Placebo	- .516	1.685	-1.45 ; 0.4166	-1.187	.255

M = Mean cholesterol level
SD = Standard deviation
CI = Confidence interval
t = Paired t -statistic
p = Computed p-value

The initial and final readings of the experimental and placebo group do not indicate a statistically significant difference.

4.4 GRAPHICAL REPRESENTATION OF DATA TO DEMONSTRATE THE TENDENCY OF RESULTS

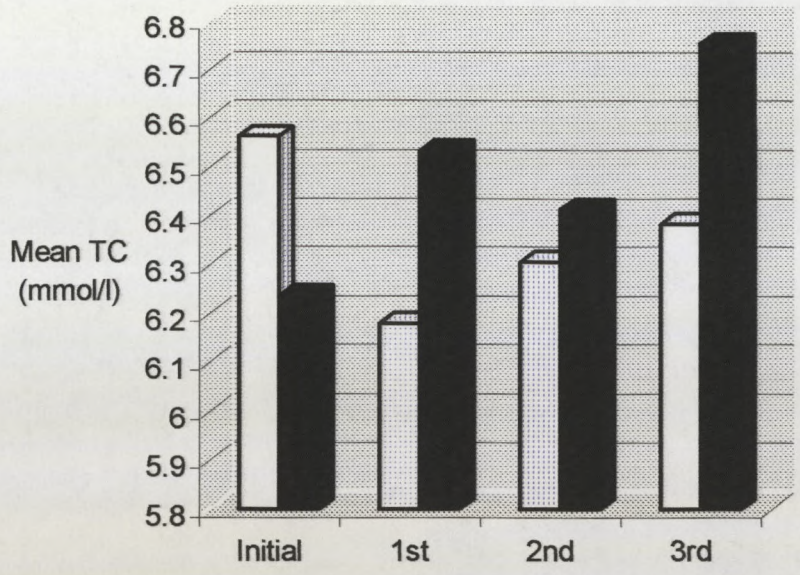


Figure 1 : Mean TC readings of treated and placebo groups taken before treatment and then on the 1st, 2nd and 3rd month.

Experiment

Placebo

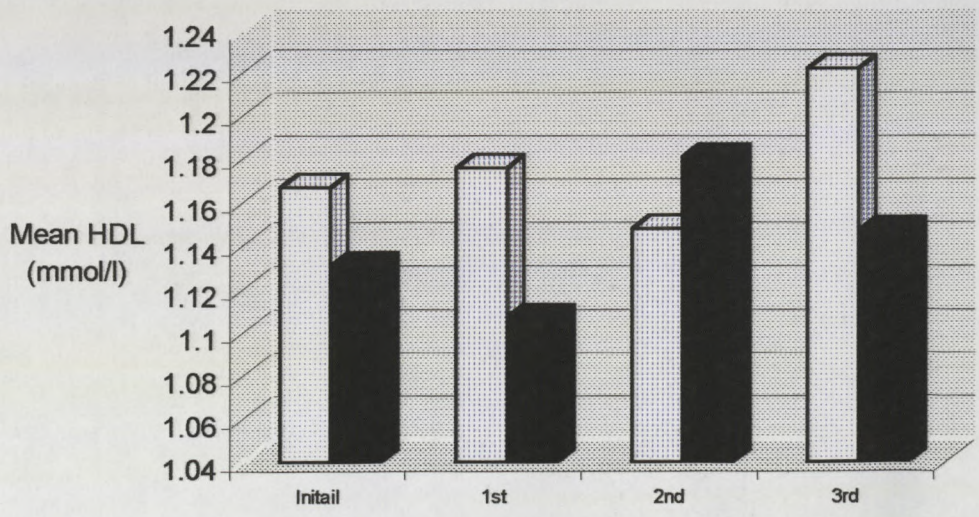


Figure 2 : Mean HDL levels of treated and placebo groups taken before treatment and then at the 1st, 2nd and 3rd months.

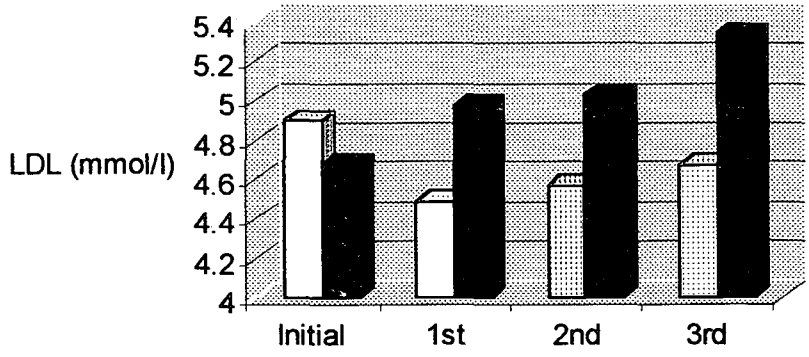


Figure 3 : LDL levels of the treated and placebo groups before teatment and after the 1st,2nd and 3rd months.

TABLE 4.5 : Summary of patient profile including remedies.

REMEDY	Treatment group	Placebo group
Arsenicum album	2	0
Causticum	1	0
Calcarea carbonica	2	0
Calcarea phosphorica	1	1
Coffea cruda	0	1
Hyoscyamus niger	1	0
Lachesis	1	1
Lycopodium	2	1
Medorrhinum	0	1
Natrum muriaticum	1	3
Natrum sulphuricum	0	1
Nux vomica	1	1
Phosphorus	1	1
Pulsatilla pratensis	1	1
Sepia officinalis	1	0
Silicea	0	1
Staphisagria	0	1
Sulphur	0	1

This patient profile indicates that the most popular remedy used was Natrum muriaticum (4 patients) followed by Lycopodium (3 patients). Other remedies that featured twice were Arsenicum album, Calcarea carbonica, Calcarea phosphorica, Nux vomica, Phosphorus and Pulsatilla pratensis.

CHAPTER 5 DISCUSSION

The National Cholesterol Education Programme (NCEP) defines hypercholesterolaemia as having total cholesterol (TC) levels <200mg/dL as a goal, levels between 200 and 240 mg/dL as borderline high and levels >240mg/dL as high risk (Berkow 1992 : 1040). Hyperlipidaemia can be divided into primary anomalies, which is not linked to an identifiable disease, or as secondary manifestations of diabetes mellitus, alcohol excess, chronic renal failure, drugs, hypothyroidism and nephrotic syndrome (Edwards & Bouchier, 1991 :766).

Approximately 4.8 million South Africans aged 15 – 64 have hypercholesterolaemia (Steyn et al. 1992). The majority of South Africans live in the lower socioeconomic income group and it is therefore important to find a treatment that is effective in the treatment of hypercholesterolaenia and which does not carry exorbitant costs. The allopathic treatment of hypercholesterolaemia is inaccessible to the majority of the South African population because of the high cost of the medication and the many side effects that is associated with the medication (Refer to 2.6.1 Allopathic Drug Treatment) It is thus argued that alternative forms of treatment of hypercholesterolaemia is required.

Gillespie (1994), Hillerman (1996) and Joseph (1994) conducted research on the homoeopathic treatment of hypercholesterolaemia. Gillespie (1994)

investigated the efficacy of Cholesterolinum 9CH in the treatment of hypercholesterolaemia. The trial proved to be statistically significant showing a 3.3% improvement in the average TC levels of the treatment group.

Hillerman (1996) investigated the efficacy of Taraxacum 5 CH in the treatment of hypercholesterolaemic patients. The trial showed a statistically significant decrease in both the TC and LDL levels.

Joseph (1994) investigated the effect of Chelidonium 3x in the treatment of hypercholesterolaemia. It was found that Chelidonium improved the cholesterol levels by a statistically significant amount.

This study was designed to evaluate the efficacy of homoeopathic simillimum treatment of hypercholesterolaemia in terms of objective clinical findings. The treatment was based on simillimum treatment (the fundamental law on which homoeopathy is based) and thus the trial was not limited to the prescription of the same remedy to each patient as was the case in the above mentioned research trials.

The statistical analysis of the TC levels showed that there was no statistically significant difference between the experimental group and placebo group at the beginning of the trial. At the end of the research trial it was found that the TC readings of the experimental group had decreased slightly while the placebo group showed an increase in the TC levels. However , the change

was not statistically significant.

The analysis of the HDL levels showed that there was no statistically significant improvement between the initial readings and the final readings of the experimental and placebo group.

The statistical analysis of the LDL levels showed that there was no statistically significant difference between the experimental group and placebo group at the beginning of the trial. At the end of the research trial it was found that the LDL readings of the experimental group had decreased slightly while the placebo group showed an increase in the LDL levels. The change, however, was not statistically significant.

This trial has shown that the homeopathic simillimum treatment of hypercholesterolaemia is not statistically significant, although the TC levels and LDL levels showed slight decreases in the experimental group, contrasted to the increases shown in the placebo group. The mean averages of TC and LDL remained in the "high risk" category for both groups throughout the trial. One is thus left to conclude that this form of treatment of hypercholesterolaemia should not be used as the most pertinent line of treatment, but should be used in conjunction with other forms of treatment although further research on homoeopathic simillimum treatment needs to be conducted.

CHAPTER 6 CONCLUSION AND RECOMMENDATIONS

6.1. CONCLUSION

The most frequent cause of the serum cholesterol exceeding 5.2mmol/l is common polygenic hypercholesterolaemia (Edwards and Bouchier : 695). (Edwards and Bouchier : 695) state that," it reflects an interaction between multiple genes and dietary and other environmental factors and has more than one metabolic basis". This leads one to conclude that all of these factors should be taken into account when treating hypercholesterolaemia and not isolate the treatment protocol only to medication and alterations of diet.

This research attempted to evaluate the efficacy of Homoeopathic Simillimum Treatment in patients with hypercholesterolaemia in terms of the levels of the major cholesterol lipoprotein fractions in blood.

No statistically significant improvement was observed at the end of the trial when the homoeopathic simillimum treatment was compared to the placebo treatment. The researcher feels that further research trials of this nature need to be conducted before it is decided that homoeopathic simillimum treatment of hypercholesterolaemia is ineffective.

6.2. RECOMMENDATIONS

The researcher wishes to recommend that future research trials have a larger patient base and that there be extensions made to the follow up period. Since lifestyle and diet play an important role in this condition, the importance of lifestyle modifications and dietary advice in conjunction with homoeopathy, needs to be evaluated and studied further.

REFERENCES

Anderson, K.M., Castelli, W.P., and Levy, D. 1987. Cholesterol and Mortality. Journal of the American Medical Association, 257 : 2176-2180.

Berkow, R., Fletcher, A.J., and Beers, M.H. (ed) 1992. The Merck Manual. 16th Edition. U.S.A. : Merck Research Laboratories.

Betteridge, J., and Kahn, M. 1998. Genetic influence on HDL Cholesterol. The Lancet,351 : 1903-1904.

Bradshaw, D., Dorrington,R.E. and Sitas,F. 1992. The level of mortality in South Africa in 1985 – what does it tell us about health ? South African Medical Journal. 82: 237-240.

Clifton,P.M., Kestin, M., Abbey, M., Drysdale,M., and Nestel,P.J. 1990. Relationship between Sensitivity to Dietary Fat and Dietary Cholesterol. Arteriosclerosis, 10 : 394-401.

Colvin, P.L., Spray, B.J. and Miller, N.E. 1994. Plasma low density lipoprotein cholesterol concentration in cynomologus monkeys ; Differing effects of age and body weight in animals consuming low and high cholesterol diets. Atherosclerosis, 111 : 191-197.

Edwards, C.R.W. and Bouchier, I.A.D. (ed.) 1991. Davidson's Principles & Practice of Medicine. 16th ed. London : Churchill Livingston.

Fahey, T. 1998. Assessing heart disease risk in primary care. British Medical Journal, 317 : 1093-1094.

Gillespe,N. 1994. Hypercholesterol and Homeopathy. M.Dip.Hom. dissertation, Technikon Natal. Durban. South Africa.

Goldbourt, U., Behar,S., Reicher-Reiss,H., Agmon,J., Kaplinsky,E., and Graff,E. et al 1993. Rationale and Design of a Secondary Prevention Trial of increasing Serum High Density Lipoprotein Cholesterol and Reducing Triglycerides in Patients with Clinically Manifest Atherosclerotic Heart Disease. American Journal of Cardiology, 71 : 909-915.

Gordon,T., Castelli, W.P., Hjortland,M.C, Kannel, W.B., and Dawber,T.R. 1977. High Density Lipoprotein as a Protective Factor Against Coronary Heart Disease. The American Journal of Medicine, 62 : 707-713.

Hahnemann, S. 1994. Organon of Medicine (6th ed.) New Delhi : B.Jain Publishers.

Hillerman, R.1996. Hypercholesterolaemia – The Role of Homeopathy. M.Tech.Hom. dissertation, Technikon Natal. Durban. South Africa.

Isselbacher, K.J., Martin, J.B., Fauci, A.S., Kasper, D.L., Wilson, J.D., and Braunwald, E. 1994 . Principles of Internal Medicine(13th ed.). U.S.A. : McGraw – hill.

Joseph,J. 1994. Homeopathy in Hypercholesterolaemia M.Dip.Hom. dissertation, Technikon Natal. Durban. South Africa.

Jouanny, J. 1993. The essentials of Homeopathic Therapeutics. France : Editions Boiron.

Kasim, S.E., Martino,S., Kim, P., Khilnani, S., Boomer A., Depper, J., Reading, B.A., and Heilbran, L.K. 1993. Dietary and anthropometric determinants of plasma lipoproteins during a long-term low-fat diet in healthy women. American Journal of Clinical Nutrition, 57 : 146-153.

Miller,N.E. 1984. Why Does Plasma Low Density Lipoprotein Concentration in Adults Increase With Age. The Lancet. 263-267.

Portney, L.G. and Watkins, M.P. 1993. Foundations of Clinical Research : Applications to Practice. Norwalk, Connectikut, U.S.A. : Appleton and Lange.

Primrose,D.E., Savage, M.J., Borcham, C.A., Cran,G.W., and Strain, J.J. 1994. Cholesterol screening and family history of vascular disease. Archives of Disease in Childhood, 71 : 239 – 242.

Ross, R. 1993. The pathogenesis of atherosclerosis : a perspective for the 1990s. Nature, 362 : 801-808.

Rossouw, J.E., Steyn, K., Berger,G.M.B., Vermaak, W.J.H., Kock, J., Seftel,H.C., and Gevers,W. 1988. Action Limits for Serum Total Cholesterol. South African Medical Journal, 73 : 693-700.

Sacks, F.M., Castelli,W.P., Donner,A., and Kass, E.H. 1975. Plasma Lipids and Lipoproteins In Vegetarians and Controls. The New England Journal of Medicine,292 : 1151-1151.

Sacks, F.M., Pfeffer, M.A., Moye, A.L., Roulou, J.L., Rutherford, D.J., Cole, G.T., Brown, L., Warnica, J.W. Malcolm, J., Arnold, A., Wun, C., Davis B.R. and Braunwald,E. 1996. The effect of Provastatin on cholesterol after myocardial infarction in patients with average cholesterol levels. The Quartely Journal of Medicine 335 (14) : 101 – 1009.

Saunders W.B. 1995 . Dorland's Pocket Medical Dictionary. U.S.A. Harcourt Brace and Company.

Shravka, 1991. Homeopathy – It's Reflection in Theosophy. Indian Journal of Homeopathic Medicine , 26 (1) : 9 – 25.

Steyn, K., Fourie,J., and Bradshaw,D. 1992. The Impact of Chronic Diseases of Lifestyle and their Major Risk Factors on Mortality in South Africa. South African Medical Journal, 82 : 227-231.

Tall, A.R. 1990. Plasma high density lipoproteins : metabolism and its relation to atherogenesis. Journal of Clinical Investigation, 86 : 379 – 384.

Taylor,P.A., and Ward,A. 1993. Women, High-Density Lipoprotein Cholesterol, and Exercise. Archives of Internal Medicine, 153 : 1178-1184.

Unwin, N., Thomson, R., O'Byrne, A.M. Laker, M., and Armstrong, H. 1998. Implications of applying widely accepted cholesterol screening and management guidelines to a British adult population : cross sectional study of cardiovascular disease and risk factors. British Medical Journal, 317 : 1125-1129.

Vine,D.F., Mamo, J.C.L., Beilin, L.J., Mori,T.A., and Croft, K.D. 1998. Dietary Oxysterols are Incorporated in Plasma Triglyceride-rich Lipoproteins, Increase Their Susceptibility to Oxidation and Increase Aortic Cholesterol Concentration of Rabbits. Journal of Lipid Research, 39 : 1995-2004.

Wierzbicki, A.S., Lumb, P.J., Semra, Y.K., and Crook,M.A. 1998. High dose Atorvastatin therapy in severe heterozygous familial hypercholesterolaemia.The Quartely Journal of Medicine 91 : 291 – 294.

APPENDIX A

PATIENT CONSENT FORM

INFORMED CONSENT FORM

To be completed in duplicate by patient/parent.

TITLE OF RESEARCH PROJECT

The purpose of this placebo-controlled study is to investigate the efficacy of homeopathic simillimum treatment in patients with hypercholesterolaemia in terms of the levels of the major cholesterol lipoprotein fractions in blood.

NAME OF SUPERVISOR

Dr. F.J.Burger

NAME OF RESEARCH STUDENT

Robert Storey

PLEASE CIRCLE THE APPROPRIATE ANSWER

1.	Have you read the research information sheet?	YES / NO
1.	Have you had an opportunity to ask questions regarding this study?	YES / NO
2.	Have you received satisfactory answers to your questions?	YES / NO
4.	Have you had an opportunity to discuss this study?	YES / NO
5.	Have you received enough information about this study?	YES / NO
6.	Who have you spoken to? _____	
7.	Do you understand the implications of your involvement in this study?	YES / NO
8.	Do you understand that you are free to withdraw from this study: a) at any time b) without having to give a reason for withdrawing, and c) without affecting your future health care	YES / NO
9.	Do you agree to voluntarily participate in this study?	

PATIENTS NAME _____ ***Signature***_____

PARENT / GUARDIAN NAME _____ **Signature**_____

WITNESS NAME _____ **Signature**_____

RESEARCH STUDENT NAME _____ **Signature**_____

APPENDIX B

Surname :
First names :
Address :

Date :
M: S: W: D:
Children :

Tel. :
Occupation :

D.O.B.
Age:

Referred by :

Presenting complaint(s) :

Location :	Sensation	<,>	Concomitant

Past history and treatment :

Childhood development / milestones :

Allergies :

Vaccination history :

Family Background :

Weather modalities :

Sleep :

Dreams :

Head :

Eyes :

U.R.I. & E.N.T. :

Ears :

Nose :

Throat :

Chest :

Heart :

Musculo – skeletal :

Skin :

Hair :
Nails :

Teeth :

Urine :

G.I.T. :

Desire :

Aversions :

Appetite :

Thirst :

Bowels :

Perspiration :

Biorhythm :

Metabolism :

Treatment – drugs presently used :

Alcohol : Quantity :

Smoker :

Tests :

Female : Menses :

Sexual :

Pregnancy - labour :

Leucorrhoea :

Infections :
S.T.D.

Male – Prostate :