



IMPACT ON SUPPLEMENTATION OF RED SHOE FLOWER (*Hibiscusrosa-sinensis*) DECOCTION IN HYPERCHOLESTEROLEMIA PATIENTS R

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Abstract

A flowering plant known as *Hibiscus - Sinensis*, widely known as the "Queen of the Tropics," may have therapeutic benefits. The sour decoction is created all over the world with the herbal mixture made from this extract. The dried *hibiscus* decoction is good for the heart and digestive health, and different sections of the hibiscus flower have been used for things like wound healing, inflammation, bacterial infections, and cardioprotective properties. There may be some truth to their claims, according to the study, but there may also be possible hazards. More study is necessary. *Hibiscus* decoction drinkers saw their levels of "good cholesterol" (high-density lipoproteins) and "bad cholesterol" (low-density lipoproteins) rise and fall, respectively. The preparation of a red shoe flower (*Hibiscus -Sinensis*) decoction and the investigation of its effects on the management of high cholesterol are the goals of this study. This study's primary goals are to identify hypercholesterolemia patients in the Thiruvavur District and assess the efficacy of red shoe flowers in lowering total cholesterol. Pre-test and post-test alone designs were used in a quantitative research strategy with hypercholesterolemia patients and clients between the ages of 31 and 50. Data were evaluated using statistical techniques for inference (independent, paired test, and chi-square test) as well as descriptive statistical analysis (frequency, percentage, distribution, mean, and standard deviation). Decreasing body fat, lowering blood pressure, strengthening the liver, and boosting the immune system are just a few advantages of this hibiscus decoction.

Keywords: Supplementation of Red Shoe Flower, Nutrient Analysis, Biochemical Estimation, Anthropometric Assessment.

INTRODUCTION

Hibiscus-Sinensis, also referred to as Queen of the Tropics, is a flowering plant that may have therapeutic benefits. The herbal concoction made using this extract is used to make sour decoctions all over the world. Several uses for the hibiscus flower's components have been documented, including the management of bacterial infections, the reduction of inflammation, and its cardioprotective effects. Dried hibiscus blossoms are rich in anthocyanins, vitamin C, and minerals, which have significant nutritional advantages. Numerous medicinal applications and health benefits of dried hibiscus decoction are available, including the lowering of blood pressure and cholesterol as well as the enhancement of intestinal and cardiovascular health. The leaves, bark, roots, and flowers of hibiscus plants are utilized in cooking and beauty products. These plant components contain qualities that help cure a variety of ailments, including anti-oxidant, anti-microbial, anti-diabetic, anti-ulcer, hepatoprotective, anti-fertility, and anti-inflammatory effects. *Hibiscus-Sinensis* has been used in several herbal concoctions and drinks. 2008 [Adda Bjarnadottir] the flowers and leaves of *Hibiscus-Sinensis* are the subjects of numerous studies using animal models to investigate their antioxidant and anti-diabetic properties. Hibiscus decoction may help lower high cholesterol, another risk factor for heart disease. Herbal remedies have garnered increased global awareness in recent decades due to their therapeutic efficacy and safety. High cholesterol, often known as hypercholesterolemia, is a major risk factor for heart disease and stroke. A low-fat diet, regular exercise, and prescription medications like statins are all part of the treatment for abnormally high or low levels of LDL or HDL cholesterol. Drinkers of hibiscus decoction noticed changes in both their "good cholesterol" (high-density lipoproteins) and "bad cholesterol" (low-density lipoproteins) levels. [Laurenpanoff, 2006] *Hibiscus-Sinensis* works wonders to control blood pressure and reduce it. Using *hibiscus* extract or its dried flowers regularly can help persons with heart issues and high blood pressure. Consuming stem extract lowers blood pressure and prevents fat from building up in blood vessels in addition to lowering cholesterol [Jeong., 2003]. This procedure improves blood flow, which lowers the risk of heart attack by a significant amount. Another element that might affect how well the body and heart operate normally is stress.

Materials and Methods

Selection of area

The current investigation was carried out in the Thiruvarur district's Sundarakkottai. The region was chosen due to its accessibility and the research's interest in examining the effects of hibiscus decoction supplementation for individuals with hypercholesterolemia there. [Gupta .2019]

Selection of sample

Purposive sampling was employed to choose 100 participants in the 36–55 age range because the study required a large amount of data. The 20 subjects who were chosen were classified as middle-aged adults from Sundarakkottai in the Thiruvarur district. The sample items are chosen using some sort of purposeful principle in sampling techniques. Hence, the publication of the sample's inclusion of a few universe-wide

units

Preparation and supplementation of *Hibiscus* decoction

The method used to make hibiscus decoction Two teaspoons of *hibiscus* powder should be mixed with 150 milliliters of water and either heated for two minutes or steeped for five minutes. Then purge the concoction. 100ml of *hibiscus* decoction should be consumed every morning on an empty stomach. The *hibiscus* decoction was used as an appetizer for 45 days, a sample of 20 individuals with hypercholesterolemia received 100 ml of *hibiscus* decoction. The 20 subjects' cholesterol levels were measured both before and after supplementation, and the results were documented.

Assessment of subject before and after supplementation of hibiscus decoction i)Assessment of nutritional status through anthropometry

Assessment of nutritional status through anthropometric measurement of the human body. height, weight, body mass index, waist hip ratio.

ii) Biochemical analysis

Before and following supplementation with the hibiscus decoction, the blood cholesterol level was measured to determine the product's impact on their parameters. Jenkins J.S. et al [1984] claim this.

iii) Clinical assessment

A crucial component of determining nutritional status is the clinical examination. The clinical examination gives clear insight into the symptoms of nutritional deficiencies that are common in persons. For all of the subjects, anthropometry measurements and clinical evaluations were carried out to detect any signs of nutritional deficiency. [Josi. K,203]

iv) Dietary pattern

A 24 hour recall is a structured interview designed to record in-depth information about all foods and beverages consumed by the subjects in the previous 24 hours [Bates et al., 2017]. I have gathered information for this study. Data for the 24 hour recall and food consumption patterns are noted on the appendix.

F) Formation of interview schedule

In an interview, an investigator sits down with respondents, and they have a face-to-face discussion while gathering information. (Gupta.S.,2000)

Table -1 The questionnaire was formulated for the study included the following information namely

| | |
|----------------------------------|--|
| A) General information | Name, Age, Sex, Marital status , Location of Staying , Educational qualification |
| B) Socio – Economic status | Types of family, Number of family members Occupational Status, Monthly income working hours. |
| C) Life style pattern | Personality type, Leisure time activity, Habit of Exercise , Hours spent for exercise, Habit of Smoking, habit of alcohol, Family history of Hypercholesterolemia. |
| D) Health status | Appetite, Vitamins and minerals supplementation |
| E) Nutritional status | Detected as hypercholesterolemia , medical check up ,any other disease, medication. |
| F) Anthropometric measurement | Height , Weight, body mass index. |
| G) Biochemical assessment | Total cholesterol, high density lipoprotein low Density lipoprotein, very low density lipoprotein. |
| H) About the formulated products | Acceptability of the products, habit of Consumption, Any changes after consumption of hibiscus decoction. |
| I) Dietary pattern | Meal pattern. |

Result and Discussion

A. General information of the subject

By using a personal interview schedule, the general information of the chosen male and female hypercholesterolemia patients was investigated. The findings are spoken about.

i) Age distribution of the subject

Figure-1 Age distribution of the subject displays the subjects' age distribution. The chosen individuals with hypercholesterolemia were between the ages of 36 and 55, according to Figure-1. In terms of age, the majority of subjects (50%) were between the ages of 51 and 55, while 25% were between the ages of 46 and 50, 15% were between the ages of 41 and 45, and 10% were between the ages of 36 and 40.

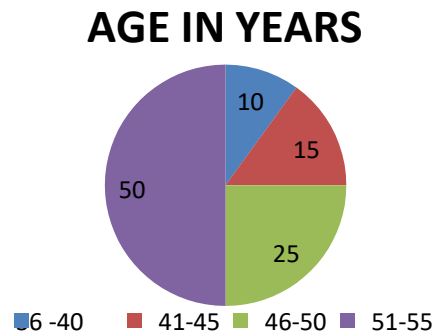


Figure-1 Age distribution of the subject

ii) Nature of work by the subjects

The subjects' nature is shown in Figure-2, which shows that sedentary labor accounted for 48% of respondents, moderate work for 36% of respondents, and heavy work for 16% of respondents. People who are sedentary tend to have greater prevalences of hypercholesterolemia. The positive effects of physical activity have been demonstrated in several prospective and retrospective investigations. 2005's Sara Long Anderson.

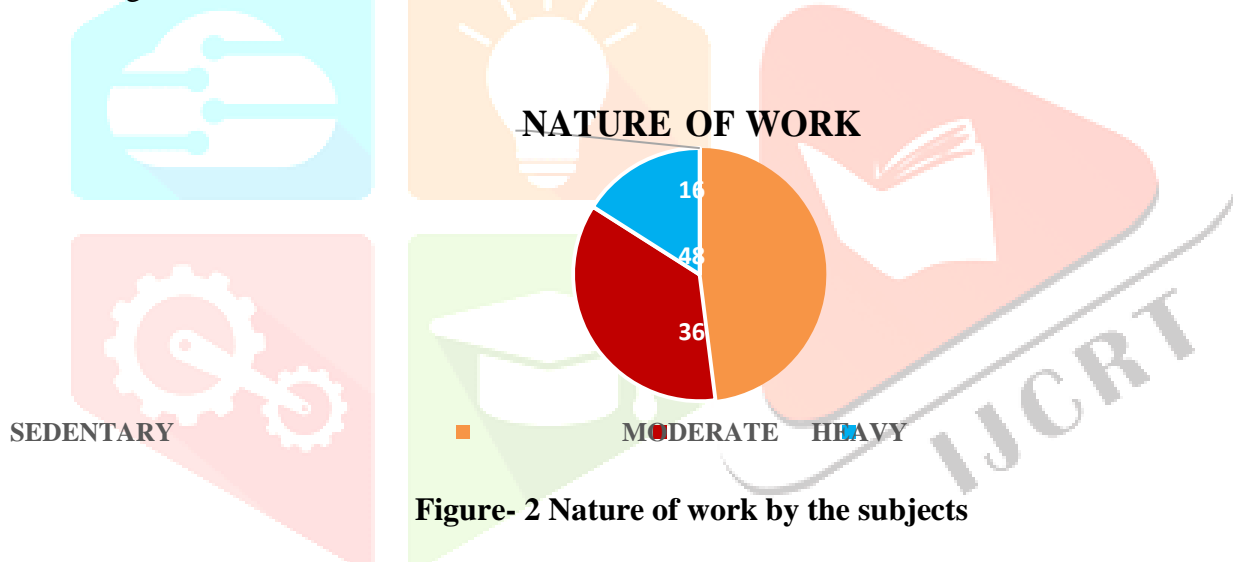
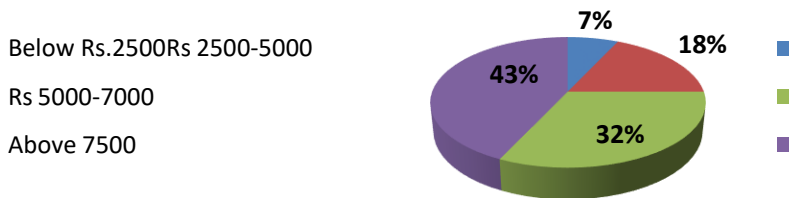


Figure- 2 Nature of work by the subjects

B) Monthly income of the subject

According to Figure- 3 of the subjects' monthly income, 43 percent of the subjects had monthly incomes above Rs. 7500, 32 percent had monthly incomes between Rs. 5000 and Rs. 7000, 18 percent had monthly incomes between Rs. 250 and Rs. 5000, and 7 percent had monthly incomes below Rs. 2500. Dietary affluence combined with sedentary lifestyles and unbalanced diets contributes to several chronic degenerative diseases like cardiovascular disease, diabetes, and cancer. Rapid industrialization, socioeconomic development, and an increase in life expectancy have all had a significant impact on how people live their lives (Nithya .A.,2008).

MONTHLY INCOME OF THE SUBJECTS**Figure- 3 Monthly income of the subject****C) Habit and types of exercise performed by the subjects**

The various actions taken by the subjects have been listed. According to Table - 2, the majority of respondents (38%) were observed walking, 19% were observed practicing yoga, 11% were observed running, and 6% were observed cycling. Among the responders, 26% did not engage in any physical exercise. A half-hour of physical exercise every day helps to decrease stress and, in turn, the risk of heart disease by up to 30%, reduce weight, and raise HDL (good) cholesterol levels. Ashtekar., (2010)

Table – 2 Habit and types of exercise performed by the subjects

| S.No | Habit of exercise | Number of the subjects |
|------|-------------------|------------------------|
| 1 | Walking | 38 |
| 2 | Jogging | 11 |
| 3 | Running | Nil |
| 4 | Cycling | 6 |
| 5 | Swimming | Nil |
| 6 | Skippping | Nil |
| 7 | Yoga | 19 |
| 8 | None | 26 |

i) Personality type of the subjects

According to Table - 3 of subject personalities, the majority of respondents—55 percent—were stressed out or multitasking. Among the responders, 45% were composed or cool. (It has been consistently demonstrated that endothelial dysfunction and oxidative stress are related to a higher risk of subsequent cardiovascular events and mortality.) (Rudolph.,2007)

Table - 3 of subject personalities

| S.NO | Personality type | Number of the subjects |
|------|--------------------------|------------------------|
| 1 | Calm or cool | 45 |
| 2 | Stressed or multi tasked | 55 |

D) Nutritional status of the subject

The people who were identified as having hypercholesterolemia are tabulated in Figure -4. The bulk of these subjects (11%) was identified as having the condition due to obesity, 5% were identified during a medical examination, and 4% were identified as having it due to chest discomfort. Early hypercholesterolemia symptoms might be mild, and patients often disregard it. Cases are often found during a standard life insurance checkup, a physical examination of the body (Klien.,2013)

DETECTED AS HYPERCHOLESTEROLEMIA

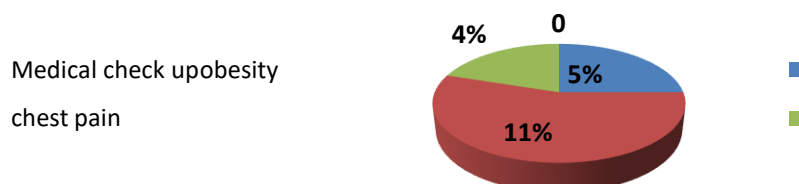


Figure -4 Nutritional status of the subject

E) Any other disease of the subjects

According to the study, 89% of the participants have another ailment, whereas 11% of the subjects are disease-free. According to Table-4, which lists any other illnesses that the participants may have had, the bulk of the individuals (47%) had diabetes mellitus, followed by 19% heart disease, 16% renal disease, and 7% gastrointestinal disease, with 11% of the subjects being completely asymptomatic. The condition of hypercholesterolemia is silent. It includes cardiac conditions like stroke and atherosclerosis, which have fatality rates that are twice as high as those from diabetes, renal illness, and gastrointestinal conditions. (Heritage.,2008)

Table-4 Any other disease of the subjects

| S.NO. | Any other disease | Number of the subjects |
|-------|--------------------------|------------------------|
| 1 | Diabetes mellitus | 47 |
| 2 | Heart disease | 19 |
| 3 | Renal disease | 16 |
| 4 | Gastrointestinal disease | 7 |
| 5 | None | 11 |

F) Anthropometric measurement of the subject

In Table-5, anthropometric measurements of the participants before and after supplementation are shown. Physical characteristics like height and weight may be used to indirectly determine body composition and determine energy needs (Grandjean 2001). The patients' average body mass index was found to be 24.87 ± 2.97 , their average weight was found to be 60.75 ± 10.84 kg, and their average height was found to be 154 ± 5.86 cm.

Table-5 Anthropometric measurement of the subject

| S.NO | Anthropometric measure | Mean and standard value of the subject |
|------|------------------------|--|
| 1 | Height | 154±5.86 |
| 2 | Weight | 60.75±10.84 |
| 3 | BMI | 24.87±2.97 |

G) Biochemical analysis of the subjects

The lipid profile of the subjects is shown in Table – 6 before and after supplementation, with the mean and standard deviation for total cholesterol before supplementation being 269±15.59 and for mean and standard deviation for total cholesterol after supplementation being 241±14.90, and the mean and standard deviation for high-density lipoprotein before supplementation being 49.95±5.46. Before supplementing low-density lipoprotein with a mean and standard deviation of 170.95±11.76, low-density lipoprotein with a mean and standard deviation of 151.25±10.16, very low-density lipoprotein with a mean and standard deviation of 38.62±7.92, and very low-density lipoprotein with a mean and standard deviation of 32.95±7.86, before supplementing triglycerides with a mean and standard deviation of 174.95±6.27. High-density lipoprotein was discovered to be a reliable indicator of healthy cholesterol. Low-density lipoprotein cholesterol and triglycerides as indicators of coronary heart disease risk (Robinson, 1998).

Table – 6 Biochemical analysis of the subjects

| S.NO. | Lipid profil | Before supplementation | After supplementation |
|-------|--|------------------------|-----------------------|
| 1 | Total cholesterol | 269±15.59 | 241±14.90 |
| 2 | High density lipoprotein (HDL) cholesterol | 44.7±69.14 | 49.95±5.46. |
| 3 | Low density lipoprotein (LDL) cholesterol | 170.95±11.76 | 151.25±10.16 |
| 4 | Very low density lipo protein (VLDL) cholesterol | 38.62±7.92 | 32.95±7.86 |
| 5 | Triglycerides | 174.95±6.27 | 164.5±7.6.94 |

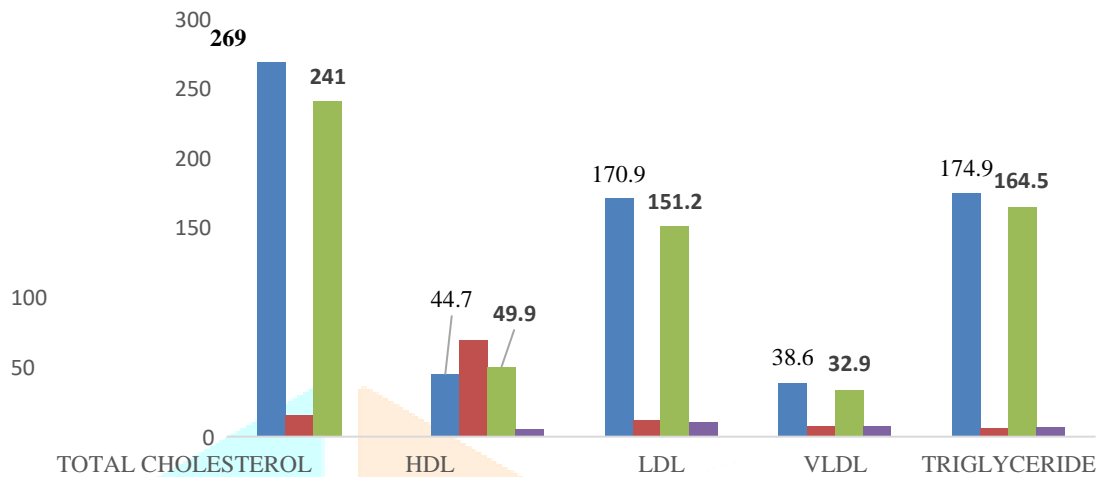
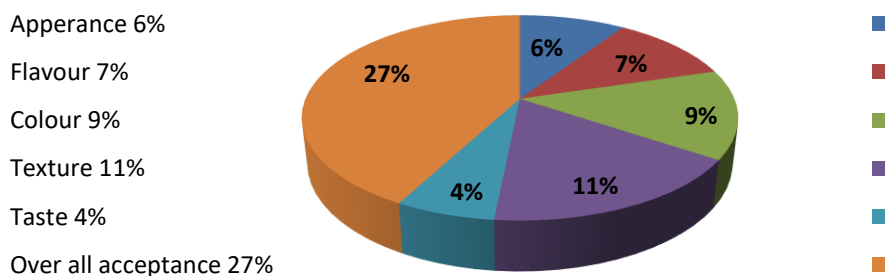


Figure – 5 Biochemical analysis of the subjects

H) Acceptability of the formulation products

According to Figure - 6, the majority of respondents (27%) expressed general approval of the product, while 11% and 9%, respectively, expressed satisfaction with its flavor and taste. Of the respondents, 7% of respondents enjoy the product's color, 6% of respondents like its look, and 4% of respondents like its feel.

Figure - 6 ACCEPTABILITY OF THE PRODUCT**i) Habit of consuming hibiscus decoction**

The Table - 7 respondents' propensity to consume hibiscus decoction According to Table7, the bulk of respondents—85%—consumed hibiscus decoction, with 15% of respondents also doing so.

Table – 7 Habit of consuming hibiscus decoction

| S.NO. | Consuming hibiscus decoction in subjects | Number of the subjects |
|-------|--|------------------------|
| 1 | Yes | 85 |
| 2 | No | 15 |

ii) Amount of hibiscus decoction per day by subjects

The amount of hibiscus decoction consumed daily by the participants, as shown in Table-8, reveals that the majority of respondents—36%—took 150 ml or less of the decoction each day, while 21% used more than 150 ml. 4 percent of responders received 50 ml of hibiscus decoction daily, while 9 percent received 100 ml of the decoction daily.

Table-8 Amount of hibiscus decoction per day by subjects

| S.NO | hibiscus decoction takenper day | Number of the subjects |
|------|---------------------------------|------------------------|
| 1 | 50ml | 4 |
| 2 | 100ml | 9 |
| 3 | 150ml | 36 |
| 4 | More than 150 ml | 21 |
| 5 | None | 30 |

iii) Benefits about hibiscus decoction of the subjects

The benefits of hibiscus decoction of the subjects are shown in Table - 9, which shows that the majority of respondents (32%) knew about the health benefits of hibiscus decoction, 28% knew about weight loss from hibiscus decoction, 22% knew about refreshment from hibiscus decoction, and 18% knew about cholesterol control.

Table – 9 Benefits about hibiscus decoction of the subjects

| S.NO | Benefits about hibiscus decoction | Number of the subjects |
|------|-----------------------------------|------------------------|
| 1 | Health benefits | 32 |
| 2 | Cholesterol control | 18 |
| 3 | Weight loss | 28 |
| 4 | Refresh ness | 22 |

I) Types of diet followed by the subjects

According to Table- 10, the majority of respondents—34%—followed a low-fat diet, 26%—a high-carb diet, 24%—a low-protein diet, and 16%—a high-fiber diet. Although soluble dietary fiber can reduce blood cholesterol in persons with high serum lipid levels, there is conflicting data about whether or not fiber can reduce the risk of coronary heart disease. There is evidence that some types of soluble fiber, including oat, bran, pectin, legume fiber, and guar, reduce blood cholesterol by forming bonds with bile acids and inhibiting their absorption (Kathleen...,1998)

Table- 10 Types of diet followed by the subjects

| S.NO. | TYPES OF DIET | NUMBER OF THE SUBJECTS |
|-------|------------------------|------------------------|
| 1 | High carbohydrate diet | 26 |
| 2 | Low fat diet | 34 |
| 3 | Low protein diet | 24 |
| 4 | High fibre diet | 16 |

Conclusion

Patients with hypercholesterolemia benefit better from hibiscus rosa Sinensis decoction. The current study concludes that hibiscus rosa Sinensis is frequently planted as an ornamental plant in gardens because of its spectacular blossoms. This plant is not only lovely, but it also plays a significant role in the health establishment. Twenty people with high cholesterol have been selected for me. I thoroughly dried the flower, ground it into powder, and created a decoction with it. Before giving them 100ml of the hibiscus rosa Sinensis decoction for 65 consecutive months starting the next day, I measured the total cholesterol level in their blood. I experimented. After giving them the pill, I checked their blood, and their cholesterol level was very low. This hibiscus decoction has several advantages, including decreasing blood pressure, supporting the liver, reducing body fat, and enhancing the immunological system.

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