Effectiveness of Coriander Seed Extract in decreasing Blood Glucose level among Diabetic Patients

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**ABSTRACT**

Diabetes Mellitus (DM) belongs to a group of metabolic disorders. It is characterised by Chronic Hyperglycemia and disturbance of carbohydrate, lipid, and protein metabolism. The cause for this condition arises from a disease in insulin secretion. The International Diabetes Federation (IDF) expresses that worldwide 415 million individuals have Diabetes Mellitus. It also predicts that by 2040 this will ascend to 642 billion. The other prediction is that 77% of individuals with Diabetes live in middle and low-income countries. 12% of the worldwide population spend on the treatment of Diabetes. With the escalating medical expenditure in treating Diabetes, a person from middle or low income may find it challenging to meet the expenses. It is an expected tendency for an individual from this category to opt for a more straightforward treatment that suits their pocket. In the recent past, all over the world, people from all walks of life know essential things about natural remedies. A lot of researches are going on in support of using natural products per se. One such study is this – on the Effectiveness of Coriander Seed Extract in decreasing Blood Glucose level among Diabetic Patients. Coriandrum Sativum is a plant that has been utilised in the administration of Diabetes. It is a herbaceous plant originally from the Mediterranean and Middle Eastern locales, having a place in the family Apiaceae. It is known to have antifungal, antibacterial, free radical searching, and lipid peroxidation activities. The study was conducted to assess the level of pretest and posttest blood glucose level. And, also to evaluate the effect of coriander seed extract in the treatment of Diabetes Mellitus. An experimental study was chosen to assess the effectiveness of coriander seed extract among diabetic clients. The present study was conducted at Mappedu. 60 male and female who come under inclusion criteria were selected by purposive sampling technique. Data was collected by using a socio-demographic variable, and random blood glucose was assessed by CBG machine.

**INTRODUCTION**

Diabetes mellitus [DM] is a group of metabolic diseases characterised by chronic hyperglycemia and disturbances of carbohydrate, lipid, and protein metabolism resulting from a defect in insulin secretion (Association, 2014). It is a disorder resulting from a variable association of heredity and ecological factor and portrayed by unusual insulin emission and an assortment of metabolic and vascular indications reflected in a propensity towards improperly raised blood glucose level, thickened thin basal lamina and neuropathy. The International Diabetes...
Federation (DF) predicts that 415 million individuals worldwide have diabetes mellitus, and by 2040 this will ascend to 642 billion (Ehff and Albd, 2016). Likewise, it predicts 77% of individuals with diabetes live in low and middle-income countries. 12% of the worldwide population spend for treatment of Diabetes.

Coriandrum sativum is a plant that has been utilised in the administration of Diabetes. It is a herbaceous plant originally from the Mediterranean and Middle Eastern locales, having a place in the family of Apiaceae. It is known to have antifungal, antibacterial, free radical searching, and lipid peroxidation activities (Sahib et al., 2013). In conventional prescription, it is utilised for the treatment of Diabetes, gastrointestinal inconveniences, for example, dyspepsia, tooting, the runs, heaving and as a sterile and emmenagogue. The best way to use coriander seeds is to soak them in water overnight and drink a glassful ϑirst thing in the morning. This water tends to keep your blood sugar levels in check throughout the day. You can add coriander seeds in your dhal, curries and rice-dishes to enjoy the wholesome goodness it has to offer. Extract all the goodness of this wonder spice and stay healthy!

A few authors have exhibited the anti-diabetic impact of coriander. Therefore, the reason for this examination was to evaluate the viability of coriander seed in the treatment of Diabetes. Considering the discoveries portrayed in writing, it is theorised a reduction of glucose in diabetic patients.

MATERIALS AND METHODS

An experimental study was chosen to assess the effectiveness of coriander seed extract among diabetic clients. The present study was conducted at Mappedu. 60 male and female who come under inclusion criteria were selected by Purposive Sampling Technique, data was collected by using socio-demographic variable developed by the researcher, and it deals with details such as age, gender, annual income, educational level, marital status, duration of being diabetes mellitus, smoking, alcohol consumption, health complaints other than DM. The tools were translated to the Tamil language. As part of the assessment of blood glucose level, CBG machine was used to check the random blood glucose level among diabetic clients. The socio-demographic data was collected, and informed consent was obtained from the sample. The pretest blood sugar level was checked by using CBG machine. The method of preparing coriander seed extract was explained to the selected diabetic clients. They were asked to soak two tablespoons of coriander seeds overnight in a glass of water and asked to consume 100ml extract early in the morning in empty stomach for a week. Then the posttest blood sugar was checked by CBG machine. The data were analysed by using experimental and inferential statistics. Additionally, paired T-test was performed to assess the effectiveness of the study.

RESULTS AND DISCUSSION

A socio-demographic variable of diabetic clients

Frequency and distribution on demographic variables among diabetic patients – Out of sixty (60) samples, 26 (43.3%) samples were male, 34 (56.7%) were female.

The age among the sixty was:

1. 12 of them were between 20 and 40 (20%);
2. 24 (40%) were under the age group of 40-60 yrs.,
3. 24 (40%) samples were under the age group of 61-80 yrs.,
4. 0 (0%) samples were under the age group of above 80yrs.

The annual income of 60 samples was:

1. 58 (96.7%) samples were below 80000,
2. 2 (3.3%) samples were between 80000 and 1 lakh,
Table 1: Frequency and distribution of demographic variable among diabetic clients

| Si.No | Demographic Variable | Frequency(N) | Percentage (%) |
|-------|----------------------|--------------|----------------|
| 1.    | Gender               |              |                |
|       | Male                 | 13           | 43             |
|       | Female               | 17           | 56             |
| 2.    | Age                  |              |                |
|       | 20 – 40 yrs          | 6            | 20             |
|       | 40 – 60 yrs          | 12           | 40             |
|       | 60 – 80 yrs          | -            | -              |
|       | <80 yrs              | -            | -              |
| 3.    | Annual Income        | 29           | 96.7           |
|       | Below 80000          | 1            | 3.3            |
|       | 80,000 – 1,00,000    | -            | -              |
|       | 100,000 – 1,50,000   | -            | -              |
|       | >1,50,000            | -            | -              |
| 4.    | Education            | 19           | 63.3           |
|       | Illiterate           | 4            | 13.3           |
|       | Elimentary           | 5            | 16.7           |
|       | Secondary            | 2            | 6.7            |
|       | Degree or diploma    | -            | -              |
| 5.    | Marital Status       | 17           | 56.7           |
|       | Married              | 2            | 6.7            |
|       | Single               | 11           | 36.7           |
|       | Widowed              | -            | -              |
|       | Divorced             | -            | -              |
| 6.    | Duration Of Being Diabetes | 7 | 23.3 |
|       | <1 yr                | 10           | 33.3           |
|       | 1 – 5 yr             | 12           | 40             |
|       | 5 – 10 yr            | 1            | 3.3            |
|       | >10 yrs              | -            | -              |
| 7.    | Habit Of Smoking     | 1            | 3.3            |
|       | At regular basis     | 4            | 13.3           |
|       | Occasionally         | 3            | 10             |
|       | Very rare            | 22           | 73.3           |
|       | None                 | -            | -              |
| 8.    | Habit Of Alcohol Consumption | - | - |
|       | At regular basis     | 3            | 10             |
|       | Occasionally         | 2            | 6.7            |
|       | Very rare            | 25           | 83.3           |
|       | None                 | -            | -              |
| 9.    | Health Complaints Other Than Dm | - | - |
|       | Heart problem        | 8            | 26.7           |
|       | Kidney problem       | 22           | 73.3           |
|       | Visual Impairment    | -            | -              |
|       | None                 | -            | -              |

Table 2: To assess the pre and post test level of blood glucose among type 2 diabetic clients

| Si.No | Test     | Mean   |
|-------|----------|--------|
| 1.    | Pre test | 319.0  |
| 2.    | Post test| 146.7  |
Table 3: Effectiveness of coriander seed extract on selected demographic variables in diabetic client

| Test-rbs                  | Standard deviation | Standard error | Paired T-test |
|--------------------------|--------------------|----------------|---------------|
| Random Blood Glucose     | 173.3              | 32.09          | 5.93          |

3. 0 (0%) samples were 1 lakh - 1.5 lakhs,
4. 0 (0%) samples were more than 1.5 lakhs.

The educational level of 60 samples was:
1. 38 (63.3%) samples were illiterate,
2. 8 (13.3%) samples were pre-elementary,
3. 10 (16.7%) samples were in secondary,
4. 6 (10%) samples were diploma/degree or any other master degree holders.

The marital status out of 60 samples was:
1. 34 (56.7%) samples were married,
2. 4 (6.7%) samples were single,
3. 22 (36.7%) samples were widow, and
4. 0 (0%) samples were divorced.

The duration of being diabetes mellitus among 60 samples was:
1. 14 (23.3%) samples were under below 1 yr.,
2. 20 (33.3%) samples were 1 - 5 yrs.,
3. 24 (40%) samples were 5 - 10 yrs.,
4. 2 (3.3%) samples were above 10 yrs.

Regarding the smoking cessation out of 60 samples:
1. 2 (3.3%) samples were regular smokers,
2. 8 (13.3%) samples were occasional smokers,
3. 6 (10%) samples were infrequent smokers, and
4. 44 (73.3%) samples were non-smokers.

Regarding alcohol consumption out of 60 samples:
1. 0 (0%) samples were regular,
2. 6 (10%) samples drank occasionally,
3. 4 (6.7%) samples were scarce,
4. 50 (83.3%) samples were non-alcoholics.

Regarding health complaints other than Diabetes mellitus out of 60 samples,
1. 0 (0%) samples had heart issues,
2. 0 (0%) samples had kidney issues,
3. 16 (26.7%) samples had visual impairment,
4. 44 (73.3%) samples had none. (Table 1)

Table 2 reveals that pre and posttest level of blood glucose among type 2 diabetes mellitus clients shows that the mean score of pretest is 319.0 and the mean score of posttest is 146.7. (Table 2 & Fig 1).

Table 3 Effectiveness of coriander seed extract on selected demographic variable in diabetes mellitus clients shows that the standard deviation is 173.3 and standard error is 32.09 and paired T test value is 5.93 (Table 3 & Fig 2).

Sivapragasam et al. support the present study. They found that the extraction, confinement and distinguishing proof of bioactive mixes and its sub-atomic instruments in the counteraction of Diabetes related difficulties (Gothai et al., 2016). Frederico et al. contemplated that the utilisation of coriander could be appropriate to attempt to diminish the plasma glucose level of Diabetes (Ehff and Albd, 2016). Bochra laribi et al. examined that medicinal species might help grow new medication details later on or by utilising coriander bioactive constituents in blend with common medications to improve the treatment of infections, for example, Alzheimer (Laribi et al., 2015). Fatemeh farzei et al. examines that customary therapeutic plants can be considered as dietary enhancements with significant potential for diabetes mellitus and possibly potential wellsprings of a new orally dynamic agent(s) (Farzaei et al., 2017). Eid et al. considered that the concentrate diminished serum glucose in streptozotocin incited diabetic rodents and expanded insulin discharge from pancreatic beta (Eidi et al., 2009). Prachayasittikul V et al. studied C. Sativum contains bioactive phytochemicals that are accounted for a wide range of biological activities including antioxidant,
anticancer, neuroprotective, anxiolytic, anticonvulsant, analgesic, hypolipidemic, hypoglycemic Activities (Prachayasittikul et al., 2018). Javed Iqbal Sultan et al. studied that Antioxidants are present in foods as vitamins, minerals, carotenoids, and polyphenols. Coriander is also rich in such (Iqbal et al., 2018). Muhammad Nadeem et al. studied that Various parts of this plant, such as seeds, leaves, flower and fruit, possess antioxidant activity, diuretic, anti-convulsion anti-diabetic activity, sedative-hypnotic activity, anti-mutagenic, anti-microbial activity, anthelmintic activity (Nadeem et al., 2013). Wesam kooti et al contemplated that numerous restorative plants contain diverse regular cancer prevention agents, specifically tannins, flavonoids, C and E nutrients that can keep up β-cells execution and decline glucose levels in the blood (Kooti et al., 2016).

CONCLUSIONS
Coriander seeds also help improve digestion, further keeping one’s blood sugar levels stable. A sound digestive system is key to keep Diabetes in check. The Present result study revealed that coriander seed extract has a significant effect in decreasing blood glucose level among diabetic clients.

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Conflict of Interest
None.

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