



## **IMPACT OF BLACK CUMIN SEEDS POWDER or NIGELLA SATIVA POWDER (KALONJI) ON TYPE-2 DIABETES CONTROL**

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### **ABSTRACT**

This study was carried out. Black cumin seed **Nigella sativa** [Kalonji (Kala Jeera)], powder impact on 200 type 2 diabetic patients were 25-60 years age-group in district hospital Raipur (Chhattisgarh). 100 patients were from control group and 100 patients were from experimental group. The objective of the study is to find out impact of black cumin seed powder on blood sugar level. Nigella sativa has a long history of use as medicine. The type-2 diabetes patients give the nigella sativa (kalonji) powder 2gm. once a day for 3 months. Before and after 3 months anthropometric, biochemical and clinical test of the subject was measured by standard method. In this research black cumin seeds powder used to improve blood glucose level and to produce insulin in pancreas in type 2 diabetic patients. Result showed that black cumin seeds powder very positive result among the type 2 diabetic patients. About 78.6% subjects see very positive result, and after test glucose level also come down on normal level. When patients tested their insulin level in the blood, they saw that insulin automatically increasing and blood sugar level decreasing. And they recover from type 2 diabetes disease. So, in this study black cumin seeds powder showed very amazing and positive result among type 2 diabetic patients in Raipur (Chhattisgarh).

**Keywords:** Nigella sativa, Type 2 diabetes, insulin resistance.

### **INTRODUCTION**

Diabetes mellitus (DM) is one of the most common lifestyle diseases. Type 2 diabetes had global prevalence estimate of 2.8% in the year 2000 and is projected to be 4.4% in 2030 [1]. Prevention and control of DM is a major challenge and requires moulding lifestyle towards more physical activity and

less calorie intake avoiding sedentary habits. However most people find it difficult to change their lifestyle and look for a less cumbersome alternative. A traditional component of food that can reduce appetite, glucose absorption in intestine, hepatic gluconeogenesis, blood glucose level, body weight, and can stimulate



glucose induced secretion of insulin from beta-cells in pancreas, may prove to be useful for prevention and control of diabetes mellitus. Most of these actions have been shown by seeds of *Nigella Sativa* and their constituents in animal experiments and at the same time have not exhibited adverse effects. Present paper attempts to summarize the properties of *N. Sativa* seeds and their constituents that may prove to be useful in prevention and treatment of diabetes.

### **Type 2 diabetes**

Type 2 diabetes has become a major global health problem as in this type of diabetes a person does not use the insulin. The disease is one of the major diseases of non-communal diseases, due to lifestyles pattern. This is called insulin resistance. Type 2 diabetes is the most common type of diabetes, with around 3 million people in the UK diagnosed with the condition. A person with type 2 diabetes has insulin resistance, meaning their pancreas doesn't produce enough insulin or the body doesn't react properly to insulin. It is

predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India, while China (42.3 million) and the United States (30.3 million) will also see significant increases in those affected by the disease. India currently faces an uncertain future in relation to the potential burden that diabetes may impose upon the country.

**Type 2 diabetes and insulin:** Most people with type 2 diabetes are treated with tablets and/or diet. Some people with type 2 diabetes also need insulin.

**Symptoms of Type 2 diabetes:** Type 2 diabetes can cause serious health issues it can be identified by following symptoms : Increased thirst, Increased hunger (especially after eating), Dry mouth, Frequent urination , Unexplained weight loss (even though eating and feel hungry), Fatigue (weak, tired feeling), Blurred vision, Headaches.

**Black cumin seed (*nigella sativa*):** *Nigella sativa* is a spice plant of family Ranunculaceae, commonly known as black cumin or black seed. It is an erect herbaceous



annual plant. It grows in Mediterranean countries and Asian countries including India, Pakistan, Indonesia, Italy and Afghanistan. In India it is called as Kalonji or kalajeera. Seeds of *Nigella sativa* (black cumin/kalonji) used in pickles as spice, have also been traditionally used in treatment of many diseases including diabetes and hypertension. Among many activities exhibited by *N. sativa* and its constituents in animal experiments, antidiabetic property is most important. Thymoquinone (TQ), a volatile oil, is one of its active constituents but antidiabetic activity has also been shown by its aqueous extract and defatted extract. *Nigella sativa* may be beneficial in diabetic individuals and those with glucose intolerance as it reduces appetite, glucose absorption in intestine, hepatic gluconeogenesis, blood glucose level, cholesterol, triglycerides, body weight and stimulates glucose induced secretion of insulin from beta-cells in pancreas; improves glucose tolerance as efficiently as metformin; yet it has not shown significant

adverse effects and has very low toxicity. Seeds of *N. sativa* have been safely consumed by human patients in many clinical trials which however were not aimed to assess its antidiabetic activity. In future clinical studies may show potential of *N. sativa*, its constituents or their synthetic analogues, in prevention and control of diabetes.

Black seed (*nigella sativa*) before. It goes by many names, including black caraway, Roman coriander, and black cumin. These seeds are loaded with health benefits that only beginning to understand. From eliminating harmful bacteria to regenerating the body's cells and tissues.

Researchers at the University of King Faisal, Saudi Arabia suggest that eating 2 grams of black cumin seeds – every day – may help lower high blood glucose level in type-2 diabetes. They observed that the fasting blood glucose levels, of type-2 diabetics, were reduced by an average of 62 mg /100 ml within 4-6 weeks.

Published in Medical Science Monitor, one study found black seed



to be effective at reducing the frequency of seizures in children who resisted conventional treatment. Black seed indeed has anti-convulsive properties.

In cell studies, black seed has been found to have anti-cancer properties, inhibiting the growth of colon cancer cells specifically. In one animal study, the seed was able to fight colon cancer in rats successfully with no observable side effects. The same obviously can't be said for conventional cancer treatments. The deadly and antibiotic-resistant bacterial infection known commonly as MRSA responded favorably to treatment with black seed in this study from the University of Health Sciences in Lahore, Pakistan. An extract from black seed has been shown to possess heart-protective qualities, dampening damages associated with heart attacks and boosting overall heart health.

A few studies have linked a thymoquinone extract from nigella sativa to reduced breast cancer tumor growth and increased

apoptosis (cell death) in breast cancer cells.

A study published in the online journal PLOS One indicates thymoquinone from black seed can induce cell death in glioblastoma cells. Glioblastoma is one of the most aggressive brain tumors of all. As it's been shown to do with other types of cancer, black seed compound thymoquinone have also been shown to induce apoptosis in leukemia cells.

A study published in Experimental and Toxicologic Pathology indicates black seed is able to dampen and reverse damage to the brain sparked by lead toxicity. Research indicates thymoquinone from nigella sativa is able to induce cell apoptosis in oral cancer cells. These benefits of nigella sativa are truly indicates this seed is a powerful healer.

### **AIMS & OBJECTIVES**

1. To assess the anthropometric test; BMI, WC., W/H, and biochemical assessment ; Blood sugar level, F.B.S. ,P.P.B.S. and other changes



after intervention therapy on Type-2 diabetes patients.

- To measure the significant changes of Nigella sativa or Black cumin seed powder on Type-2 Diabetes patients.

## MATERIALS & METHODS

This prospective study was conducted between the age group of 25-60 years was selected from the NCD Clinic district hospital, Raipur Chhattisgarh. The study design was survey and informal experimental design.

After confirmation of diagnosis, 200 patients who fulfilled the inclusion and exclusion criteria were enrolled in this study. Written informed consent was taken from all the patients enrolled. Approval from the institutional ethical committee was also obtained. The patients were divided into two groups experimental and control group of 100 each. In 100 subject experimental group the Nigella Sativa group, patients were advised to take nigella sativa seeds powder (kalonji powder) 2g twice a day for a period of 3 months before meal. In group II (the patients were kept under

Doctor Prescription and gives other medicine. Assessment of nutritional status of an individual was done by this methods: Anthropometric measurement: BMI (body mass index), WHR (waist to hip ratio), WC (waist circumference), Fasting and postprandial blood glucose, fasting lipid profile, and waist circumference were recorded before therapy and after 3 months completion of therapy by standard methods. All the patients was asked to blood profile own have their examination. The examination was done before and after intervention between the gaps of 3 months. Diet survey was to help measure nutrients, **foods** or **eating** habits. Dietary survey was done by using **food frequency questionnaire** and **3 day recall** methods. A booklet containing importance of nutrition, Low GI (Glycemic Index) food and healthy food practices was developed with nutritionist, doctors, housewives and professionals. The booklet the help was further standardized for its reliability and validity. Importance of functional foods and herbs was suggested through these booklets.



The effect of nutrition education on type-2 Diabetic Patients, lifestyles, and daily routine etc. was analyzed in the research work. The obtained data was analyzed and the differences in the mean of various parameters was compared. The result was statistically by KAP test, mean, percentage, test using SPSS software.

## RESULTS AND DISCUSSION

### **(a) Comparison of Effect of Nigella Sativa Powder(Kalonji Powder) on experimental group and Control group:**

Table 1. Revealed that 66.62 per cent patients from 25-60 age group amazing changes in Anthropometric measurement; BMI, W/H ratio, and waist circumference .They feel very well and beneficial after eating this powder.

### **(b) Effect of black cumin seeds(Kalonji) powder on blood glucose level**

Table 2. Revealed that effect of black cumin seeds powder on blood glucose level type 2 diabetes about 71.25 per cent patients found that 90-130mg/dl below Blood glucose level and feel very well after eating this powder.

### **(c) Effect of black cumin seed powder to increasing insulin secretion**

Table 3. Revealed that 2 hour after glucose administration N. Sativa or black cumin seed powder to increasing 16-166mIU/L insulin secretion in about 56 per cent type 2 diabetes patients and about 66 per cent found no changes. And 1 hour after glucose administration in 60 per cent patients increasing insulin secretion 18-276mIU/L and 40 per cent patients found no changes.

The treatment or experimental group showed significant improvement with reference to total fasting blood glucose. Nigella sativa powder was found to be effective as an add-on therapy in patients of insulin resistance syndrome. Nigella sativa powder has a significant activity in diabetic and dyslipidemic patients.

According to the findings of the study the diabetic patients when the black cumin seed powder given to the patients of the Raipur city suggest that eating 2 grams of black cumin seeds powder every day – may help lower high blood glucose level in type-2 diabetes. They observed



that the fasting blood glucose levels, of type-2 diabetes, were reduced by an average of 65 mg /100 ml within 3- 6 weeks. This study found that Black cumin seed powder more helpful to reduced blood sugar level in type 2 diabetes patients.

#### CONCLUSION

Nigella sativa powder decreased weight and body

mass index after 3 months intervention in patients with type 2 diabetes. Nigella sativa powder reduced fasting blood sugar and Post-prandial blood sugar level in patients with type 2 diabetes. Nigella sativa powder decreased weight loss, Waist circumference and Waist/Hip ratio in patients with type 2 diabetes.

**Table1: Effect of Nigella Sativa (Kalonji) seed powder on experimental and control group of Anthropometric Changes:**

	<b>Experimental Group(100)Mean</b>	<b>Control Group(100) Mean value</b>
<b>Body Mass Index</b> (19-25 kg/m <sup>2</sup> )	23kg/m <sup>2</sup> (64.75%)	24.52 kg/m <sup>2</sup> (35.25%)
<b>Waist/Hip Ratio</b>	0.79(66.56%)	0.80(33.44%)
<b>Waist Circumference</b>	80 cm (68.56%)	90cm.(31.44%)

**Note:** figures in parenthesis given percentage to total.

**Table 2: Effect of black cumin seeds powder on blood glucose level type 2 diabetes patients:**

<b>Blood glucose level</b>	<b>Experimental Group(n=100 ) Mean value</b>	<b>Control Group(n=100) Mean value</b>
F.B.S.(Fasting Blood Sugar)	100mg/dl (74.57%)	130 mg/dl(25.43%)
P.P.B.S.(Post Prandial Blood Sugar)	130mg/dl (68.48%)	160mg/dl(31.52%)

**Note:** figures in parenthesis given percentage to total.

**Table 3: Effect of black cumin seed powder on control group an experimental group increasinginsulin secretion:**

<b>S. No.</b>	<b>Insulin level on Normal Blood sugar level</b>	<b>Insulin Range (mIU/L)</b>	<b>Yes</b>	<b>No</b>	<b>Total</b>
<b>1.</b>	2 hour after glucose administration	16-166	<b>56.34%</b>	<b>43.66%</b>	<b>100</b>
<b>2.</b>	1 hour after glucose administration	18-276	<b>62.65%</b>	<b>37.35%</b>	<b>100</b>

**Note:** figures in parenthesis given percentage to total.



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