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Research Article

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Nigella Sativa (Ns) Could it be a New Remedy for Type 1 Diabetic Patients

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Abstract

Nigella sativa (NS) is a widely used medicinal plant throughout the world. Seeds and oil have a long history of folklore usage in various aspects of medicines and food. It has been used to treat a wide range of diseases including diabetes mellitus (DM). DM is a chronic incurable disease with high mortality and morbidity and increasing prevalence. The aim of this study was to investigate the hypoglycemic effect of (NS) in type 1 diabetic patients. 30 patients with type I diabetes aged 5 to 17 years were included in the study after consenting their parents. Their medical history was taken to confirm that they were fit in the last month and their FBG was measured. They were given NS (2gm per day) with yogurt, beside their regular treatment (insulin) without changing their dose or diet for 30 days. Fasting blood glucose (FBG) was rechecked after that and compared with the initial FBG paired t-test in Statistical Package for the Social Sciences (SPSS) 22 software. The mean levels of FBS before and one month after the intervention were 259 ± 102 and 134 ± 70 mg/dl respectively. There was significant reduction in FBS after treatment with NS (P =0.000). In conclusion NS, a natural product, showed a significant improvement in FBG in type 1 diabetic patients. More studies are recommended in the future to determine the optimal dose, duration and frequency of NS as an antidiabetic drug, its mechanism of action in type1 diabetes and to search for the active antidiabetic ingredient as well as to study the effect of NS in prevention of diabetic complications.

Keywords: Nigella Sativa, Type 1 Diabetic Patient, Hypoglycemic Effect

Introduction

Nigella Sativa (NS) belongs to the family Ranunculaceae has many medicinal properties like; antidiabetic, anticancer, analgesic, anti-inflammatory, immunomodulation, anti-asthmatic, cardiovascular protective, gastro-protective, hepato-protective and renal protective effects [1-24]. It also has antibacterial, antifungal, anti-schistosomiasis, antioxidant, neuro-pharmacolgical and anticonvulsant activities [25-30]. The most important active compound of this plant is thymoquinone [12, 13]. Many studies proved the safety of this plant [31]. A previous study in Sudanese in Khartoum state showed that, both N sativa and bee honey seem to have some benefits to asthmatics with no hepato-renal toxicity [32]. Other studies indicated that NS oil is a potential drug in treating DM as well as improving of insulin signaling pathway [33].

Diabetes mellitus is a chronic disorder of glucose metabolism results from dysfunction of pancreatic beta cells, insulin resistance or both. It is a serious global health problem the prevalence of which has been rising more rapidly in middle and low income countries [34].

The disease prevails in both genders and all age groups, so there is concern among the general public about its control and treatment [35]. In 2015, diabetes was the direct cause of 1.6 million deaths, WHO estimates that diabetes will be the seventh leading cause of death in 2030. Uncontrolled diabetes leads to serious damage to many of the body's systems, especially the nerves and blood vessels [34]. It can be divided primarily into two types: type I or insulin dependent diabetes mellitus and type II or non-insulin dependent diabetes mellitus [36]. Type I diabetes mellitus is an autoimmune disease characterized by local inflammatory reaction in and around islets that is followed by selective destruction of insulin secreting β-cells and it occurs mainly in childhood [35]. It is mainly treated by injected insulin as it cannot be given orally and the inhaled insulin is still under trials and no oral treatment is available [37].

Objectives

The objective of this study was to investigate the safety and hypoglycemic effect of NS on type 1 diabetics.

Methods

This study was conducted on 30 diabetic children (14 males and 16 female). Thirty patients with type I diabetes aged 5 to 17 years were included in the study after consenting their parents. Their medical history was taken to confirm that they were fit in the last month and their FBG was measured. They were given NS (2gm per day) with yogurt, beside their regular treatment (insulin) without changing their dose or diet for 30 days. Fasting blood glucose (FBG) was rechecked after that.

5ml of blood was collected by laboratory technician to measure fasting blood glucose (FBG) after overnight fasting (8 hours). FBG was estimated by glucose oxidase method using Bio systems A25 automated clinical chemistry analyzer.

Data was analyzed using paired t-test in Statistical Package for the Social Sciences (SPSS). 22 software and p value of 0.05 was taken as statistically significant.

Results

The mean of FBG before, and one month after the use of NS were 259 ± 102, 134 ± 70 mg/dl respectively (Table 1, Figure 1). There was a significant reduction in FBG (*P* =0.000). The general health of the children was better.

Table 1: The effect of oral Nigella sativa on FBG in type1 diabetic children

Variable	Before treatment	After treatmentfor 1/12	P value
Fasting blood glucose(mg/dl)	259 ± 102	134± 70	0.000

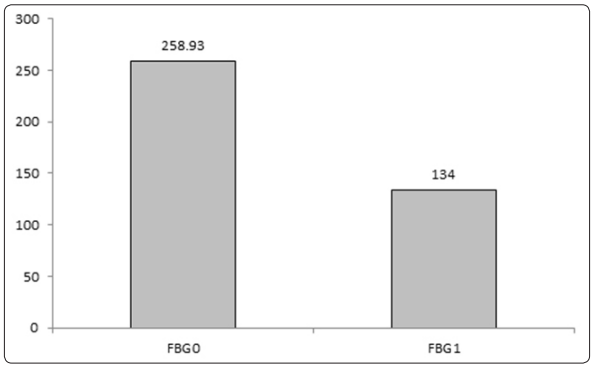

Figure 1: Fasting blood glucose in mg/dl before the use of NS (FBG0) and one month after oral 2g/day of Nigella sativa in type 1 diabetic children

Discussion

The only available remedy for type1 DM is injectable insulin therapy and inhaled insulin is not yet standardized. Compliance to Continuous insulin injections has been big challenge to the control of diabetes and its complications. In this study the traditional use of the natural herb Nigella sativa in treatment of so many diseases and its antidiabetic effect in type 2 DM has been tested in Type1DM [9].

Many experimental studies on the effect of NS on streptozoticin induced diabetes in rats have shown that it has a hypoglycemic effect [2-4]. Streptozoticin destroys the beta cells and in effect it is actually Type1DM.

Type I diabetes is an autoimmune disease and Nigella sativa was found to be immunomodulatory [17, 18]. Bamosa et al found that NS seeds (1, 2 and 3 g/day) significantly improved the glycemic control with no toxicity in Type 11 diabetic patients [9]. In this present study we investigated the hypoglycemic effect of N.S in Type I diabetic patients who were on regular insulin treatment. The use of oral whole NS seeds has decreased the FBG significantly without any side effects and the parents felt that their children were more fit.

In conclusion this study confirmed the oral hypoglycemic action of NS in Type I diabetic patients. More studies are needed to see its long term effect, its appropriate dose for proper control of DM, its active ingredient and its mechanism of action.

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