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Review Article

**PHYSIOLOGICAL EFFECTS OF NIGELLA SATIVA ON
BODY-A REVIEW**Morteza Salarzai¹, Mahmood Anbari², Fateme Parooei^{1*}¹ Medical student, Student Research Committee, Zabol University of Medical Sciences,
Zabol, Iran²Zabol University of Medical Sciences, Zabol, Iran**Abstract:**

Introduction: *Nigella Sativa* has a lot of healing properties, such as improving inflammatory, diabetes, cardiovascular, renal and liver diseases. Chemical compounds of back cumin include fixed oils [35-40%], volatile oils [-0.05%], proteins [23%], Various amino acids, sugars, mucilages, alkaloids, organic acids, tannins, resins, lipases, phytosterols, vitamins, and various types of minerals; seeds such as timolol thymoquinone and di-thymico-quinone are derived from ferrous oil of *Nigella Sativa*.

Methods: In this review article, the databases Medline, Cochrane, Science Direct, and Google Scholar were thoroughly searched to identify the studies investigating Physiological effects of *Nigella Sativa* on body. In this review, the papers published until early January 2017 that were conducted to study the Physiological effects of *Nigella Sativa* on body were selected. In searching for the articles, those English papers were selected that had Physiological effects of *Nigella Sativa* on body.

Results: The results showed that the alcoholic and oil extract of *Nigella Sativa* on diabetic rats with alloxan glucose decreased the level of serum significantly, compared to untreated groups, after 10 days

Discussion and Conclusion: Disturbances in macronutrient metabolism are due to insulin secretion or environmental resistance to insulin in type 2 diabetes, which leads to increased blood glucose, followed by glucose oxidation, non-enzymatic glucose, and the formation of advanced glycation products

Key words: Physiological, *Nigella Sativa*, body

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INTRODUCTION:

Nigella Sativa has a lot of healing properties, such as improving inflammatory, diabetes, cardiovascular, renal and liver diseases[1]. Chemical compounds of back cumin include fixed oils [35-40%], volatile oils [-0.05%], proteins [23%], Various amino acids, sugars, mucilages, alkaloids, organic acids, tannins, resins, lipases, phytosterols, vitamins, and various types of minerals; seeds such as timolol thymoquinone and di-thymico-quinone are derived from ferrous oil of *Nigella Sativa*[2]. Thymoquinone is one of the substances that produces a major part of the medicinal properties of the seed sativa. Anti-inflammatory, antioxidant, antihistaminic, and black yeast extracts have many pharmacological effects, such as decreased inflammatory cytokines, decreased glucose, lipids, and hypertension. Based on formerly conducted studies and obtained results, thymoquinone can increase the activity and expression of antioxidant enzymes such as glutathione, catalase, superoxide dismutase, glutathione peroxidase and glutathione reductase; it, also, reduces the expression of nitric oxide synthase enzyme and peroxidation of lipids, resulting in decreased free radicals and oxidative stress[3].

METHODS:

In this review article, the databases Medline, Cochrane, Science Direct, and Google Scholar were thoroughly searched to identify the studies investigating Physiological effects of *Nigella Sativa* on body. In this review, the papers published until early January 2017 that were conducted to study the Physiological effects of *Nigella Sativa* on body were selected. In searching for the articles, those English papers were selected that had Physiological effects of *Nigella Sativa* on body.

Findings

The effects of alcoholic and oil extract of *Nigella Sativa* on blood glucose in alloxan diabetic rats have been constantly investigated. Doses of 270 and 810 mg/kg alcoholic extract and 1.5 mg/kg oil extract of *Nigella Sativa* have been applied to treatment groups for 25 days[2]. The results showed that the alcoholic and oil extract of *Nigella Sativa* on diabetic rats with alloxan glucose decreased the level of serum significantly, compared to untreated groups, after 10 days[4]. Like glibenclamide, *Nigella Sativa* extract, with a dose of 225 mg/Kg, reduces glucose concentrations in diabetic rats significantly. Possible mechanisms for these effects include: increased insulin production from beta pancreatic cells, decreased gluconeogenesis in the liver, and increased liver cellular insulin sensitivity[5]. The results of several studies have, also, showed that *Nigella Sativa* extract significantly decreased serum triglyceride and serum cholesterol levels after two weeks. A

300 mg/kg dose of hydroalcoholic extract of *Nigella Sativa* can increase the weight of diabetic animals by 33% in streptozotocin diabetic rats in 30 days; it, also, can decrease serum glucose and lipid [total cholesterol, triglyceride, LDL] levels of diabetic rats up to near normal levels and increase serum HDL levels in diabetic rats[6]. The mixed effect of *Nigella Sativa* extract and thymoquinone, either combined in food or in the form of intraperitoneal injection, on glucose serum of rats has been put to research and analysis. Following values and mixtures have yielded the most optimum results regarding reducing the level of glucose serum: 250,500,1000,1500,2000,2500 mg/kg of *Nigella Sativa*, 0.5,1,2,4,6 and 8 mg/kg of *Nigella Sativa*, and 6 and 8 mg/kg thymoquinone[7].

DISCUSSION:

Disturbances in macronutrient metabolism are due to insulin secretion or environmental resistance to insulin in type 2 diabetes, which leads to increased blood glucose, followed by glucose oxidation, non-enzymatic glucose, and the formation of advanced glycation products[8]. In this case, reduced sugars react easily with lipids and proteins, increasing the production of reactive oxygen species and reducing the antioxidant defense system activity[9]. All these mechanisms cause oxidative stress in diabetic patients, followed by the development of diseases such as atherosclerosis, renal and hepatic impairment. In addition to oxidative stress, inflammation is a common feature in people with type 2 diabetes[10]. The anti-inflammatory and antioxidant properties of *Nigella Sativa* can improve the secretion of insulin hormones [protecting pancreatic beta cells] and reduce insulin resistance, which results in controlling blood sugar and diabetes[11]. Previous studies investigated the effect of *Nigella Sativa* and *Nigella Sativa* extract. Receiving capsules containing back cumin extract of 2 and 3 grams per day for 12 weeks improves glycemic indices, insulin resistance, performance of pancreatic beta cells, and blood lipid parameters in patients with type 2 diabetes[12]. The results of studies conducted on rats showed that back cumin oil can improve glycemic indices, blood lipid parameters and reduce liver glucose production. In the other two studies, receiving thymoquinone has reduced the concentration of inflammatory cytokines, Malondialdehyde and nitric oxide, and increased the activity of the enzyme superoxide dismutase, catalase, glutathione peroxidase in rats[13].

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