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Hypoglycemic Effects of Extract Nigella Sativa in Diabetic Mice Model

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ABSTRACT

Background: Adiponectin is an important adipokine with anti-inflammatory and insulin-sensitizing effects, the circulating levels of which are reduced in individuals with type 2 diabetes and obesity. Indeed, there is evidence that adiponectin released from perivascular adipose tissue (PVAT), that may play a key role in vascular physiology, as bioactive molecules released from it could have direct paracrine effects on the underlying vessel. The present study investigated the effects of extract Nigella sativa (N. sativa) on blood glucose levels of diabetic mice. **Materials:** Eight-week-old male musmusculus were treated with alloxan (150 mg/ kg) by a single intraperitoneal injection to induce diabetes mellitus. At 3 days of injection, N. sativa extract (150 and 300 mg/kg) was administered via gavage for 2 weeks. **Results:** The extract of N.Sativa administration significantly reduced blood glucose level ($P < 0.05$). However, N.Sativa did not alter a body weight. **Conclusion:** Extract of Nigella Sativa improved blood glucose level in diabetic mice model.

Introduction

Diabetes patients saved by the world from year to year is increasing. According to the International Diabetes Federation (IDF), the world occupation that suffers from diabetes mellitus has reached 197 million, and the mortality rate is around 3.2 million people.

Diabetes mellitus is one of the most common lifestyle diseases. Type 2 diabetes has a global prevalence of 2.8% in 2000 and is projected to be 4.4% in 2030 (IDF, 2009). Treatment with plants in Indonesia is often an alternative therapy that can help overcome health problems, it is very important for plants. One of the herbs approved by the community is Nigella Sativa (NS) because it supports very nutritious and has many pharmacological effects if given according to the right dosages (Rao, M, et all, 2010).

Previous research by A.M. Mohamed et al (2009) conducted a test of Nigella Sativa seed powder on streptozotosin-induced mice (STZ) which gave blood circulation and fructosamine effects as well as hemoglobin and albumin levels, as well as anti-diabetic and anti-glycosylation (Akbarzadeh, et al, 20017). In patients with diabetes lipid metabolic disorders occur, which causes the problem of dyslipidemia due to interference with the process of lipogenesis and lipolysis. One sign of

dyslipidemia that occurs in HMG patients is CoA-reductase (Kaleem M, et al, 2006).

Nigella sativa has been used for medicinal purposes for centuries N. sativa traditionally used for a variety of conditions and treatments related to respiratory health, stomach and intestinal health, kidney and liver function, circulatory and immune system9.Nigella sativa possess biological, pharmacological and biochemical actions, including antibacterial bronchodilator and anti-parasitic (Elshiekh,2015).

In Indonesia by several groups of Nigella Sativa (NS) people is still believed to be an alternative therapy in the management of DM. Research on the effect of NS on total calcium and zero levels has not been carried out in Indonesia, Furthermore, we are interested in further researching about Nigella Sativa (NS) in increasing calcium and cholesterol.

Material and methods

Animal

Eight-week-old male mus musculus were purched from Animal laboratories (Universty of Hang Tuah, Surabaya), after approval by the animal Ethics committee of Hang Tuah. All experiment procedures conformed to guidelines for animal experimentation of Hang Tuah University. The animals were acclimatized at room.

Plant Material Collection and Preparation of Extracts Nigella sativa

The Nigella sativa were collected from Surabaya, Indonesia. The dried leaves were powdered using a milling machine. The powder, weighing about 1.5 kg, was sequentially extracted by maceration with three solvents to obtain methanol extract (ME). The initial extraction was conducted using petroleum ether (40–60 °C), followed by chloroform and, finally, methanol. The extracts obtained were filtered with Whatman No.1 filter paper and concentrated in vacuo by a rotary evaporator (Labortechnik, AG CH-9230, Postfach, Flawil, Switzerland) at reduced pressure.The concentrated extracts were dried in the oven (50 °C) to remove the remaining solvents and the dried extracts were kept in the freezer (−25 °C) until further use in the designated experiments.

Laboratory Data

The blood was collected from the tall. Blood glucose was measured by Blood glucose tools.

Statistical analysis

All results are expressed as mean ± SEM. Comparison of parameters between two groups was performed with unpaired Student's t-test Comparisons of dose-respons curves were made by two-factor repeated measures ANOVA, followed by Tukey's post hoc test for comparison between groups. A value of $P < 0.05$ was considered significant.

Results and Discussion

Data processing of blood glucose in the sample is carried out simultaneously following the allotted time. Blood sugar data used is the average amount of blood glucose taken before induction, three days after induction and two weeks after being treated with Nigella Sativa extract of each group.

Table.1 The effects of Extract Nigella Sativa in body weight and blood glucose levels

	Ctrl (n=5)	DM (n=5)	DM+ENS-1 (n=5)	DM+ENS-2 (n=5)
Body weight (g)	37.5±1.17	37.29±1.47	36.40±1.14	38±1.22
Blood glucose (mg/dl)	122.5±3.06	271.67±4.92†††	192.2±3.8***†††	155.8±4.58***†

Ctrl; control, DM; diabetes mellitus, DM+ENS-1; Diabetes mellitus with extract nigella sativa (150mg/kg), DM+ENS-2; Diabetes mellitus with extract nigella sativa (300mg/kg) group. (n=4-6, per group) ***; P<0.01 compared with DM group; † † †; P<0.01 compared with control group. All values are mean ± SEM.

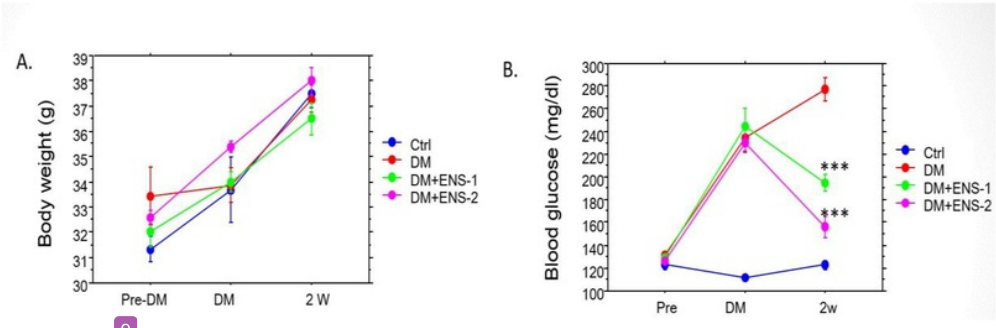

Figure 1. The effects of Extract Nigella Sativa in body weight and blood glucose levels (A and B) Resuts of ekstract nigella sativa in body weight and blood glucose levels. (n=4-6, per group) ***;P<0.01 compared with DM group. Data represent mean ± SEM.

From the table above, only the treatment group experienced a decrease in blood glucose levels. Where it was found that treatment one had a stronger effect than treatment two. Furthermore, statistical calculations using one-way ANOVA to test differences between groups on blood sugar levels. Based on the test results obtained a significant difference between the study groups, so it can be concluded that the administration of nigella sativa extract for 2 weeks at a dose of 150 and 300 mg / kg / day has an effect on reducing the blood glucose levels of alloxan-induced mice.

Diabetic hyperglycemias induce certain biochemical parameter such as increased blood urea production in diabetes by enhancing catabolism of liver & plasma protein. Recent scientific investigations have also confirmed the efficacy of plant preparations, few of which are most effective against diabetes (Krishnamurthy, 2012). In diabetes, Oxidative stress was thought to be a result of free radicals generated during autoxidation of glucose (WHO, 2010).

Conclusions

It is concluded from study that N.sativa acts effectively acts well against diabetes.

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References

Ahmad A, Husain A, Mujeeb M, Khan SA, Najmi, AK, Siddique NA et al, 2013. A review on Therapeutic Potential of Nigella Sativa : A Miracle Herb. Asian Pac J Trop Biomed. 3(5): 337–352

Akbarzadeh,et al. Induction old Diabetes by Streptozotocine in rats. Indian Journal of clinical Biochemistry,2007.22 (2) pp60-64)

Alimohammadi et al. protective and antidiabetic effects of extract from Nigella Sativa on Blood Glucose concentrations Agints Streptozotocin (STZ)- Induced Diabetic in Rats: an Experimental Study with Histopathological Evaluation. 2013

Bruno Vergès, Pathophysiology of diabetic dyslipidaemia: where are we? Diabetologia (2015) 58:886–899. DOI 10.1007/s00125-015-3525-8

Elshiekh Y.H AndMona A M abdelmageed; Phytochemical screening and antimicrobial activity of Strigahermonthica and Nigella sativa seeds. American Journal of Research Communication: 2015; 3(3): 24-33.

Gardner D, Sholback D. Greenspans Basic and Clinical Endocrinology 8th Edition. USA: Mc.Graw-Hill. 2007

Jorns A, Klempnauer J, Tiedge M, lenzen S. Recovery of pancreatic beta Cells in response to Long-term Normoglycaemia after pancreas or Islet Trabnplantation in Severely Streptozotocin Diabetic Adult rats. 2001)

Kaseem M, Kirmani D, Aif, et al. Biochemical effects of Nigella Sativa L seeds in Diabetic rats. Indian Journal of experimental Biology vol.44.2006 pp 745-748).

Krishnamurthy, B., J. Chee, G. Jhala, S. Lynch and K.L. Graham et al., 2012. Complete diabetes protection despite delayed thymic tolerance in NOD8.3 TCR transgenic mice due to antigen-induced extrathymic deletion of T Cells. Diabetes, 61: 425-435.

Longo Dan et al. Harrisons Principles of Internal Medicine 18 th Edition. USA: Mc.Graw-Hill.2012.

Mythilli MD, Vyas R, Akila Gunaserkaran S. Effects of Streptozotocin on the Ultrastructure of Rat Pancreatic Islet. Microscopy Research and Technique. 2004.63:pp274-281

Paarakh PM, 2009. Nigella Sativa Lin – A comprehensive review. Indian Jornal of Natural Products and Resources vol 1(4) : 409-429

Rao,M.Upendra,et.Al. Herbal Medicine for Diabetes Mellitus: A Review USA: International Journal of Pharm Tech Research, 2010

The IDF consensus worldwide de nfiition of the (IDF, 2009).

World Health Organization: Global Health Risks, Mortality and Burden of Disease Attributable to Selected Major Risks. December: 2010

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