

INVITRO STUDY OF ANTIDIABETIC ACTIVITY OF NIGELLA SATIVA MOTHER TINCTURE

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ABSTRACT

Diabetes mellitus is an endocrine condition in which the body does not make enough or responds correctly to insulin, resulting in excessively high blood glucose levels. Nigella sativa, often known as black seed or black cumin, has long been used to treat diabetes. The purpose of this in vitro study is to look into the anti-diabetic properties of Nigella sativa mother tincture using an Alpha amylase inhibition test. The Alpha amylase inhibition assay, a widely renowned technique that assesses the antidiabetic inhibition percentage using various quantities of Nigella sativa mother tincture, is used to determine the efficacy of this investigation. The results demonstrate the efficacy of nigella sativa mother tincture in the treatment of diabetes mellitus. Furthermore, the inhibition percentage demonstrates a significant rise in anti-diabetic action. The bioactive compound like thymoquinone in Nigella sativa may play crucial role in inhibiting diabetes mellitus.

KEYWORDS: Antidiabetic, diabetes, endocrine, inhibition, nigella

INTRODUCTION:

Diabetes mellitus (DM), commonly referred to as diabetes, is a metabolic disorder characterized by high blood glucose levels over a prolonged period. While 70–110 mg/dL fasting blood glucose is considered normal, blood glucose levels between 100 and 125 mg/dL are considered prediabetes, and 126 mg/dL or higher is defined as diabetes. There are two major forms of diabetes mellitus: type 1 and type 2. ⁽¹⁾ Chronic diabetes conditions include type 1 diabetes and type 2 diabetes. Potentially reversible diabetes conditions include prediabetes and gestational diabetes. ⁽²⁾ Insulin is a hormone that regulates blood glucose. Hyperglycaemia, also called raised blood glucose or raised blood sugar, is a common effect of uncontrolled diabetes and over

time leads to serious damage to many of the body's systems, especially the nerves and blood vessels.⁽³⁾ *Nigella sativa* (Family - Ranunculaceae) is a widely used medicinal plant throughout the world. The most important active compounds are thymoquinone (30%-48%), thymohydroquinone, Di thymoquinone, p-cymene (7%-15%), carvacrol (6%-12%), 4-terpineol (2%-7%), t-anethol (1%-4%), sesquiterpene longifolene (1%-8%) α -pinene and thymol *etc.*⁽⁴⁾ In traditional medicine, *Nigella sativa* has been used in different forms to treat many diseases including asthma, hypertension, diabetes, inflammation, cough, bronchitis, headache, eczema, fever, dizziness and influenza.⁽⁵⁾ A special oil extracted from *Nigella sativa* is used as digestive tonic and stimulant. *Nigella sativa* has action over digestive tract and respiratory tract.⁽⁶⁾

NEED OF THE STUDY:

Diabetes mellitus has emerged as a major global health concern, with rapidly increasing prevalence and associated complications such as cardiovascular diseases, neuropathy, nephropathy, and retinopathy. Despite the availability of several synthetic antidiabetic drugs, their long-term use is often associated with adverse effects, high cost, and limited accessibility in developing regions. This creates a strong need for safer, affordable, and effective alternative therapies. *Nigella sativa* (black seed) has been traditionally used in various systems of medicine for managing diabetes and related disorders. Its bioactive constituent, thymoquinone, has demonstrated promising hypoglycemic and antioxidant properties. However, most studies have focused on crude extracts or isolated compounds, while limited scientific data is available specifically on the mother tincture form, which is widely used in homeopathy and herbal practice. Therefore, the present study is needed to: Scientifically validate the traditional use of *Nigella sativa* mother tincture in diabetes management, Evaluate its enzyme inhibitory through in vitro, Identify its potential as a natural, safer antidiabetic agent, Provide a foundation for future pharmacological and clinical research. In conclusion, this study bridges the gap between traditional knowledge and modern scientific proof, therefore facilitating the development of homoeopathic medications.

MATERIALS AND METHODS:

STUDY SETTING:

Biomeitez Research and Development Pvt.Ltd

SAMPLE:

Nigella sativa mother tincture

TYPE OF STUDY:

Invitro Alpha Amylase Inhibitory Assay

PROCEDURE:

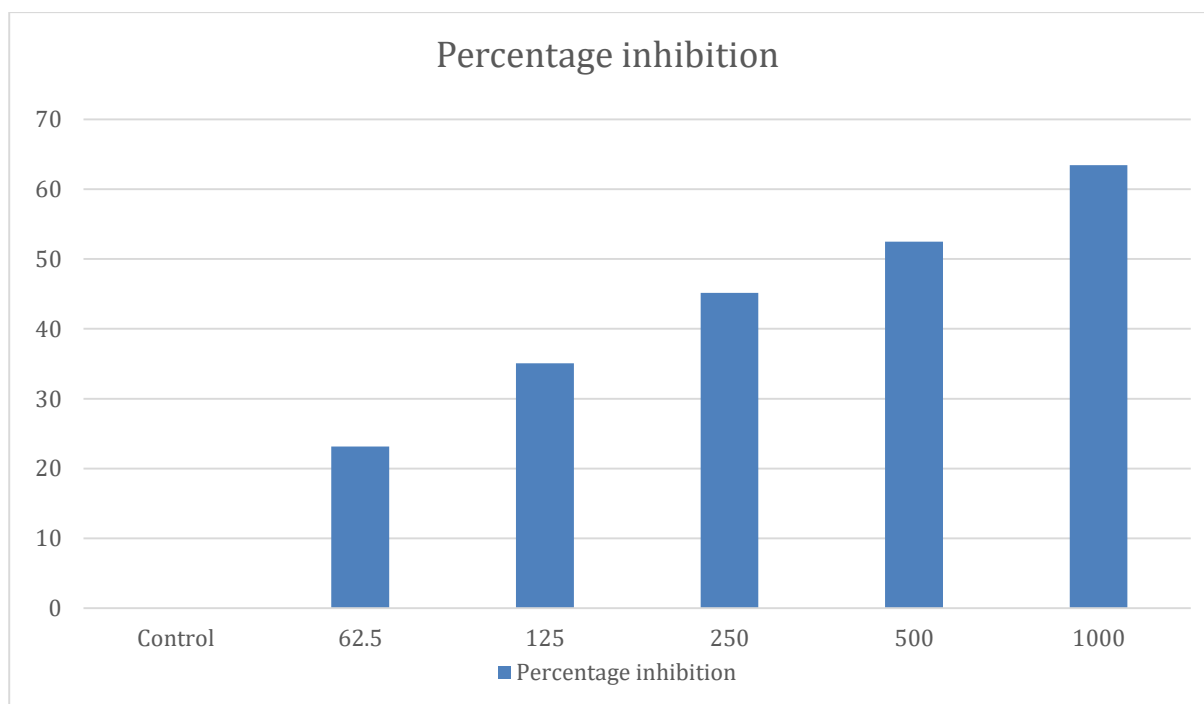
Different concentrations of sample such as 62.5 $\mu\text{g}/\text{mL}$ – 1000 $\mu\text{g}/\text{mL}$ from a stock concentration of 10 mg/mL and make up to 100 μl using 25 mM phosphate buffer pH 6.9, containing 25 μl of porcine α amylase at a concentration of 0.5 mg/ml were incubated at 25°C for 10 minutes. After pre incubation, 25 μl of 0.5% starch solution in 25 mM phosphate buffer pH 6.9 was added. The reaction mixtures were then incubated at 25°C for 10 minutes. The reaction was stopped with 50 μl of 96 mM 3, 5 dinitro salicylic acid colour reagent. The micro plate was then incubated in a boiling water bath for 5 minutes and cooled to room temperature. Absorbance was measured at 540 nm using a microplate reader (Erba, Lisascan)

% inhibition = $\{(\text{OD of control} - \text{OD of sample}) \div \text{OD of control}\} \times 100$

RESULT AND DISCUSSION:

Table 1: Analysis of sample concentration, optical density and percentage inhibition

Sample concentration (µg/ml)	OD at 540 nm	Percentage inhibition
Control	0.2646	0
62.5	0.2034	23.129
125	0.1718	35.071
250	0.1451	45.162
500	0.1257	52.494
1000	0.0967	63.454



Graph 1: Graph plotting sample concentration vs percentage inhibition

The nigella sativa mother tincture were examined at various concentrations, including 62.5, 125, 250, 500, and 1000 I., they were shown to have respective inhibitory effects of 23.12%, 35.07%, 45.16%, 52.49%, and 63.45%. Hence the study satisfies the aim in proving the efficacy of Nigella sativa mother tincture in anti-diabetic activity.

CONCLUSION:

Homoeopathy hence plays a major role in treating diabetes mellitus and more advanced studies regarding the scientific action of our medicines can help Homoeopathy grow long way. The Homoeopathic preparation of Nigella sativa mother tincture is studied in laboratory using alpha amylase inhibition assay. It is evident that Nigella sativa mother tincture, a homoeopathic remedy, is considerably more effective in treating diabetes mellitus.

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