A Traditional Medicine, Nigella Sativa Can Be Effective on Novel Coronavirus (Sars-Cov-2) and Pulmonary Diseases (Hypothesis)

This paper has been proposed as a result of the common thinking and work of the COVID19/STORM team

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Received: 15 April 2020; Accepted: 20 April 2020; Published: 27 April 2020

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Abstract

In late December 2019, a group of patients applied to hospitals with a diagnosis of pneumonia with an unknown etiology in Wuhan, China. The pathogen, novel coronavirus SARS-CoV-2 was detected by local hospitals using a monitoring mechanism for “pneumonia of unknown etiology”, which was established to identify new pathogens in a timely manner after the 2003 SARS outbreak. Nigella sativa is an annual herb. Nigella sativa has been considered for treatment of various diseases and is one of the most widely investigated herbs. In this review, we will especially focus on the antibacterial, antiviral effects of Nigella sativa. Most importantly, we aimed to review whether it is effective against the current SARS-CoV-2 (COVID19), and against bacterial and viral superinfection accompanying this virus, and whether it can be effective in the treatment of SARS-CoV-2 related lung diseases.

Keywords: Nigella sativa; SARS-CoV-2; COVID19; antiviral; antibacterial; pulmonary diseases; hypothesis

Introduction

Coronavirus (COVs) is a large single strand RNA virus family. Novel coronaviruses appear regularly, especially due to the high prevalence and wide distribution of coronaviruses, large genetic diversity and frequent recombination of their genomes [1]. Among the previous outbreaks of coronaviruses include severe Acute Respiratory Syndrome (SARS) -CoV and Middle East Respiratory Syndrome (MERS) -CoV, previously described as factors with a major public health threat. In late December 2019, a group of patients applied to hospitals with a diagnosis of pneumonia with an unknown etiology in Wuhan, China [2]. The pathogen, novel coronavirus SARS-CoV-2 was detected by local hospitals using a monitoring mechanism for “pneumonia of unknown etiology”, which was established to identify new pathogens in a timely manner after the 2003 SARS outbreak. On January 30, 2020, the World Health Organization (WHO) declared COVID-19 as a “public health emergency of international concern” [3].

Nigella sativa is an annual herb. Nigella sativa has been considered for treatment of various diseases and is one of the most widely investigated herbs. This plant is known by different names, for example black cumin (English), black caraway seeds (USA), and corekotu (Turkish) [4].

Many active compounds of black seeds have been isolated, identified and reported so far. The ingredients of Nigella sativa (black cumin) seed includes: proteins, alkaloid, fixed oil, saponin and essential oil [5].

Some of these mixed oils contain unsaturated fatty acids which includes: arachidonic, linoleic, linolenic, eicosadienoic, palmitic, oleic, stearic acid and more [5, 6].

Nigella sativa contains essential oils such as thymoquinone (TQ), thymohydroquinone (THQ), nigellone, dithymoquinone, thymol and more. Quinine, where TQ is mostly abundant, is responsible for most of the pharmacological effects. Moreover, Nigella sativa seeds also have different vitamins and minerals such as Fe, Ca, K, Zn, P, Cu [5].
Antiviral Activity of Nigella Sativa

We searched Nigella sativa for its antiviral activity and found 19 articles in PubMed. We have examined all of these publications and presented their results under this title. In a study that belongs to Oyero et al. Alpha-Zam (a Nigella sativa formulation) selectively inhibited HCV replication [12]. This study leads us to consider Nigella sativa as a new antiviral agent against HCV infection. Furthermore, in another study belongs to Barakat et al. after 3 months of Nigella sativa treatment decreased viral load of HCV [13].

In one study belongs to Zaheer et al. showed Nigella sativa's antiviral activity against isolated Infectious Laryngotracheitis Virus [14]. Another study belongs to Umar et al. in infected with H9N2 turkeys, Nigella sativa's immune-stimulant and immunomodulator activities decreased pathogenicity of H9N2 and inhibited viral replication [15].

When we searched for the effect of Nigella sativa on HIV in PubMed, we found 7 publications. We have examined all of these publications and presented some of their results under this title. In a study that belongs to Mandana Behbahani, honey obtained from Petro selinum sativum, Nigella sativa, Citrus sinensis, Zataria multiflora, Citrus aurantium and Zizyphus mauritiana flowers have a strong anti-HIV1 activity [16]. Onifade et al. established that Nigella Sativa reduced the viral load in 6 months in a study on an HIV positive patient [17]. Gurmua et al. have interviewed 300 patients used Nigella sativa and similar traditional medicine methods. As a result, they suggested that Nigella sativa can be used additionally in HIV / AIDS patients [18]. In another study by Onifade et al. A 27-year-old HIV-positive woman is diagnosed in the antenatal period. This patient received Nigella sativa treatment instead of antiretroviral treatment. In repeated serology tests, the patient's HIV test results were negative [19].

The Effect Of Nigella Sativa On Pulmonary Disorders

In Vitro and in Vivo Effects of Thymoquinone on Pulmonary Disorders in Different Experimental Studies

Pulmonary diseases such as Chronic Obstructive Pulmonary Disease (COPD), asthma, lung fibrosis and lung cancer are known as causes of morbidity and death all over the world and could occur following abnormal inflammatory process. It has been showed that Thymoquinone (TQ) which is the major component of the volatile oil of Nigella sativa (54%) has beneficial protective effects against various diseases through anti-inflammatory, anti-oxidant and anti-apoptotic activities in various experimental studies [20]. Akhmet Feridun Isik et al. designed one of these studies and revealed that thymoquinone improved oxygenation while both thymoquinone and steroids protect lung tissue from Acute Lung Injury (ALI) and Acute Respiratory Distress Syndrome (ARDS) histopathologically [21]. Mohamed El Gazzar et al. showed that TQ attenuates allergic airway inflammation by inhibiting Th2 cytokines and eosinophil infiltration into the lungs of mice [22].

many studies prove that Nigella sativa has very strong and useful effect as an antibacterial agent.
Nigella Sativa L. Dosage and Part Used

During PubMed searches, we found that Nigella sativa was used in different ways. In particular, different doses and usage patterns have been reported according to the disease [27]. Although its use in the form of oil obtained from seeds is common, it has also been shown to be used as an extract in studies [25, 27-29, 30, 31]. For its use as medicinal tea, a teaspoon of crushed seeds is added to a glass of boiling water and can be taken twice a day as a tonic [32]. In addition, intravenous, intramuscular, intraperitoneal use has been reported in animals in some studies [28, 31]. Especially in the literature on antiviral uses, 10 ml of oral intake has been reported 3 times a day [27]. Nigella sativa has also been reported to have a hypotensive effect in studies [28]. Therefore, we recommend that hypotensive patients be under doctor's control. It has been reported to be safe for use in pregnant women [33]. As a result of the compilation, we have made regarding the way of use, we anticipate that Nigella sativa can be used in the form of 10 ml 3 times a day in the treatment and especially in the prevention of SARS-CoV-2 (COVID19). Although it can be used differently, oral use can be envisaged especially for its preventive effect, but it requires further clinical studies that the use of im and/or iv may be more effective during pulmonary disease due to SARS-CoV-2 (COVID19).

As a result, when we examine the article titled “A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version)” published by Jin et al., [34] we see that traditional treatment methods have a very important role in the treatment and especially in the prevention of the disease. Interestingly, when we search for articles, we also encountered studies that some traditional medicines are effective on coronavirus. We summarized the traditional medicine used in these studies and the results of which type of coronavirus was studied in Table 1. As a result of the literature review, in studies related to Nigella sativa, we found that there are positive results regarding the use of this traditional medicine in antibacterial, anti-viral, pulmonary diseases. Further laboratory and clinical studies are required to prove the effect of Nigella sativa on SARS-CoV-2 (COVID19).

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<tr>
<th>Traditional Medicine Agent</th>
<th>Affected Coronavirus Type</th>
<th>References</th>
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