



Effects of herbal supplementation on lowering temperature and increasing oxygen saturation in COVID-19 patients

Muhtadi ¹, Fahrur Nur Rosyid ^{2,*} and Guntur Nur Cahyo ³

¹ Faculty of Pharmacy, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia.

² Department of Medical Surgical Nursing, School of Nursing, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia.

³ Biology and Science Department, Faculty of Teaching and Education, Universitas Muhammadiyah Surakarta. Surakarta, Indonesia.

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Abstract

Introduction: Coronavirus disease (COVID-19) is an infectious disease caused by a virus known as SAR-CoV-2. SARS-CoV-2 is a positive single-stranded ribonucleic acid (RNA) virus, which has an incubation period of up to 14 days. Currently, several studies have shown the benefits of herbal medicine in post-COVID 19 patients including honey, Virgin Coconut Oil (VCO) and Black cumin.

Method: This research is quasi-experimental research with pre-test and post-test groups. Respondents were patients who were positively infected with COVID 19 in the working area of the Sukoharjo Health Center. The number of respondents consisted of 100 people who were divided into 2 groups.

Results: In this study there were 100 patients infected with COVID 19 who participated, and were divided into two groups, namely the treatment group (n = 50) who were given VCO oil supplements, honey, and Black Seed and the control group (n = 50) were given placebo. The test results showed that there were significant differences between the intervention group and the control group in decreasing body temperature and increasing oxygen saturation with a P value = 0.001.

Conclusion: Provision of herbal supplements for COVID-19 in the form of habatussauda, honey, and VCO has a significant effect on oxygen saturation compared to the control group. All COVID-19 patients who are given herbal medicine supplement formulations to support the treatment of COVID-19 can be cured.

Keywords: COVID 19; Herbs; Black Cumin; Honey; Oxygen Saturation; VCO

1. Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by a virus known as SAR-CoV-2. SARS-CoV-2 is a positive single-stranded ribonucleic acid (RNA) virus, which has an incubation period of up to 14 days, symptoms usually appear between 2 - 14 days after exposure generally around 80% -90% are mild or moderate infections and many Some of them may be asymptomatic [1]. In the period after this pandemic took place, a condition suffered by patients called long COVID appeared. Long coronavirus disease 2019 or post-corona virus disease 2019 (post-COVID-19 or long COVID) is a sequel to a previous infection with acute respiratory syndrome coronavirus 2 (SARS-CoV-2)[2]. This syndrome is manifested as a group of symptoms, mainly but not limited to fatigue, shortness of breath, persistent cough, chest pain, cognitive impairment and affective symptoms, giving rise to concerns that Long COVID is becoming a

* Corresponding author: Fahrur Nur Rosyid

Medical Nursing Department, Faculty of Health Sciences, University of Muhammadiyah Surakarta.

serious health problem [2],[3]. Six months after acute infection, 33% of COVID-19 patients may experience serious neuropsychiatric symptoms, while 13% of them even receive their first diagnosis months after the acute phase. Consequent lung injuries, which can be identified by chest computerized tomography abnormalities (CCTAs), are accompanied by reduced oxygen saturation (SpO₂) that can exacerbate the inflammatory response and may persist even after full recovery [4].

Besides this decrease in SpO₂, an increase in body temperature in the acute phase of the disease is also one of the most common signs of infection and inflammation to detect infected SARS-CoV-2 individuals.[5]. The degree of temperature rise reflects the severity of inflammation and peak body temperature during the acute phase is associated with an increased risk of death[6]. This shows that patients with Long COVID, lower SpO₂ and higher peak body temperature during the acute phase predict affective and physiosomatic symptoms, chronic fatigue, sleep disturbances, cognitive and GIS disorders and autonomic symptoms of Long COVID. Thus, lower SpO₂ and higher body temperature and associated CCTA and immune inflammatory response during the acute phase are new drug targets for preventing long-term COVID-related physio-affective phenomena.[7]. Patient management focuses on providing supportive care, such as oxygenation, ventilation, and fluid management. Systematic combination treatment of low-dose corticosteroids and anti-virals and inhaled interferon atomization has been encouraged as part of the critical management of COVID-19[8].

The current treatment strategy applied to infected patients is treatment using corticosteroid therapy and other drugs such as remdesivir, ribavirin, interferin- β , interferon- α , hydroxyquinine, and the like which have anti-inflammatory functions to suppress inflammation caused by cytokine storms.[9]–[11]. However, the use of these drugs can have a negative impact, namely increasing plasma viral load in non-ICU patients which results in worsening of the disease[12],[13]. In this post-Pandemic era, herbal plants can play an important role in the drug discovery process for complementary and alternative medicine, so that they can prove to be time and cost effective. Medicinal plants and their phytoconstituents offer diverse pharmacological properties and an unlimited scope as part of medicinal systems.[14]. Currently, several studies have shown the benefits of herbal medicine in post-COVID 19 patients, including honey[15], Virgin Coconut Oil (VCO)[16]and Black cumin (Nagilla Sativa)[17].

Previous research conducted by Ashraf et al., (2020) and Dacasin et al., (2021)demonstrated the positive impact of consuming Nigella Sativa, Honey, and VCO Oil in helping recover symptoms that appear in COVID 19 patients. VCO is known to have pharmacological properties, including antiviral, antioxi dant, anti-stress, antimicrobial, and anti-inflammatory properties. The results of research conducted by Angeles- Agdeppa et al., (2021)showed Overall, the VCO-treated intervention group showed a faster recovery from COVID-19 symptoms and a significantly higher reduction in average CRP levels compared to the Control group after 28 days. These results are consistent with the anti-viral and anti-inflammatory properties of VCO metabolites which reinforce the therapeutic benefits of VCO supplements.

Honey can be used as an immune booster because of its content which can increase the proliferation of T and B lymphocytes, stimulate phagocytosis, and regulate the production of vital pro-inflammatory cytokines from monocytes, such as tumor necrosis factor (TNF), interleukin 1 beta (IL-1 β), and IL. -6. On the other hand, honey also exhibits anti-inflammatory activity which inhibits the expression of these pro-inflammatory cytokines[13]. The dual immunomodulatory role of honey has been attributed to its antioxidant properties, which prevent and manage oxidative stress [20]. Besides that, Nigella. Sativa extract also contains several important active ingredients such as thymoquinone (27.8%–57.0%), -simen (7.1%–15.5%), carvacrol (5.8%–11.6%). %), t-anetol (0.25%-2.3%), 4-terpineol (2.0%-6.6%), and longifoline (1.0%-8.0%) which were reported to have activity antiviral, antitumor, and antimicrobial [17].

2. Methods

This research is a quasi-experimental research with pre-test and post-test groups. Respondents were patients who were positively infected with COVID 19 in the working area of the Sukoharjo Health Center. The number of respondents consisted of 100 people who were divided into 2 groups, namely as many as 50 people were divided into the treatment group and 50 people into the control group, in the intervention group the respondents were given herbal treatment packages consisting of Honey, Black Seed, and VCO Oil, patients were asked to consume these herbs for 7 days with a dose that has been adjusted for each herb. The control group was given a placebo and asked to consume it for 7 days. Respondents will be given a questionnaire and carried out an examination consisting of SPo₂ and blood pressure before and after the intervention phase is given.

3. Results

In this study, there were 100 patients infected with COVID 19 who participated, and were divided into two groups: the treatment group (n = 50) who were given VCO oil, honey and habbatusauda oil supplements and the control group (n = 50) who were given a placebo. Baseline characteristic data between the two groups showed no difference (Table 1). There was no difference in all baseline parameters in the treatment group and the control group. On examination obtained age, sex, education, comorbidities and complaints experienced.

Tables 2 and 3 show the results that there were significant differences between the intervention group and the control group in decreasing body temperature and increasing oxygen saturation with a value of P = 0.001. on examination of oxygen saturation there were results P = 0.001 in the intervention group and 0.085 in the control group, this shows that there was no change in the control group. The same thing was found in checking body temperature which obtained results P = 0.001 in the intervention group and P = 0.070 in the control group.

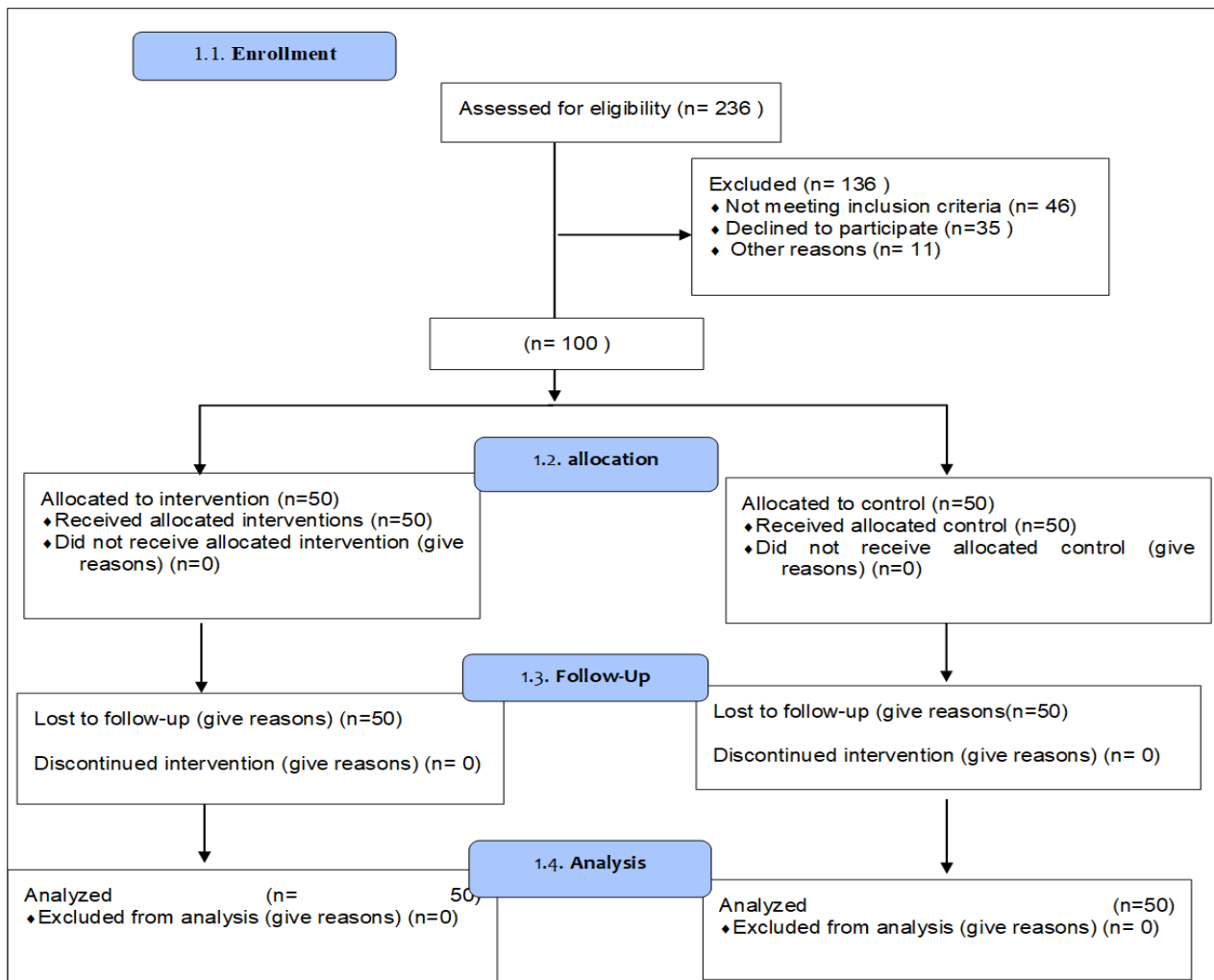


Figure 1 Consort Diagram of Participants

Table 1 Characteristics of Respondents

No	Characteristics	Intervention Group (n=50)		Control Group (n=50)		P-Value ^a
		f	%	f	%	
1	Gender					0.072
	Man	29	58	28	56	
	Woman	21	42	22	44	
2	Age					0.081
	30-40	16	32	14	30	
	40-50	28	56	29	57	
	50-60	6	12	7	13	
3	Sign and symptoms					0.082
	Hard to breathe	18	36	16	32	
	Fever	15	30	14	28	
	Cough	6	12	8	16	
	Fatigue	6	12	6	12	
	Dizzy	5	10	6	12	
4	Comorbidity					0.083
	Diabetes mellitus	26	52	24	48	
	Hypertension	14	28	18	36	
	Heart disease	6	12	3	6	
	Kidney failure	4	8	5	10	

^apaired sample t-test

Table 2 Effects of Giving Herbal Medicine Formulations on Oxygen Saturation (SPO2) of COVID-19 Patients

Variable	Pre-test	Post-test	Δ at week 1	p-Value ^a	P-Value ^b between groups
Intervention Group	93.585 ± 3.022	97.453 ± 0.774	3,868 ± 2,828	0.001	0.001
Control Group	90.240 ± 0.995	91.256 ± 1.657	2,879 ± 1,870	0.085	

^apaired sample t-test; ^bt independent sample test

Table 3 Effects of Giving Herbal Medicine Formulations on the Temperature of COVID-19 Patients

Variable	Pretest	Posttest	Δ at week 1	p-Value ^a	P-Value ^b between groups
Intervention Group	38.134 ± 3,121	36.565 ± 0.832	3,687 ± 1,799	0.001	0.001
Control Group	37.890 ± 0.899	36.877 ± 1.657	2,927 ± 1,954	0.070	

^apaired sample t-test; ^bt independent sample test

4. Discussion

Based on the results of data analysis in Tables 2 and 3, scientific information was obtained that the administration of herbal drug supplementation packages had a significant effect on oxygen saturation compared to the control group. In the treatment group, all patients who were given herbal medicine supplementation packages in addition to standard medical drugs for the COVID-19 health protocol could be cured. And several testimonies from volunteers on average experienced significant health changes and improvements on the 5th day. Whereas for the control group there were 4 volunteers who died, because they had co-morbid diseases, namely diabetes mellitus and hypertension.

Based on the results of the statistical analysis of the data, it shows that the herbal medicine supplement formulation can increase oxygen saturation better than the control group. Where at the beginning of the infection the oxygen saturation level was 93%, after consuming herbal supplements the saturation level increased to 97%. This is because giving herbal medicinal supplements, including VCO oil which has a high vitamin E content, can help treat respiratory tract infections caused by viruses.

Honey [21], Black Cumin (*Nigella Sativa*) [17] and VCOs [16] has substances contained in it in the form of antiviral, anti-allergic, antiplatelet, anti-inflammatory, antitumor, and antioxidants. Honey consists of water, sugars, enzymes, amino acids, flavonoids, organic acids, phenolic acids, minerals, vitamins, and volatile compounds. Honey consists of small amounts of vitamins, including the B vitamins thiamine (B1), riboflavin (B2), pantothenic acid (B5), biotin (B8 or H), nicotinic acid (B3), pyridoxine (B6), and folic acid (B9) and vitamin C [15]. Besides that. The macro and micro elements it contains include magnesium, potassium, sodium, iron, calcium, phosphorus, iodine, manganese, lithium, zinc, cadmium, cobalt, nickel, barium, copper, chromium, silver, arsenic and selenium which are found in honey. [22]. In an effort to use honey as a treatment against COVID-19, honey's antiviral properties need to be utilized. Several studies have shown honey's antiviral activity against various viruses such as herpes simplex virus (HSV), human immunodeficiency virus (HIV), respiratory syncytial virus (RSV), varicella-zoster virus (VZV), adenovirus, and influenza virus (Ch'ng & Tang, 2020). In addition, honey also has anti-inflammatory capacity and is recognized as a useful immune enhancer and can complement it as an effective treatment for reducing the severity of viral diseases by preventing and managing symptoms that arise in COVID-19 patients [21].

VCO is reported to be useful in fighting microbes, bacteria and viruses, its biologically active compounds with antiviral properties are flavonoids [19]. Coconut oil derivatives contain lauric acid, which is known for its antiviral activity; consequently, the body converts them into monolaurin monoglycerides when ingested, their antiviral activity includes the following three important mechanisms: first, they can cause the disintegration of the viral envelope; secondly, in the viral replication cycle, inhibition of the final maturation stage occurs, and lastly, it can prevent the binding of viral proteins to the host cell membrane [19]. Many published studies have used VCO as a dietary supplement for periods ranging from 4 to 6 weeks, with doses ranging from 30 mL/day to 50 mL/day [16]

Previous studies reported that *Nigella Sativa* has immunoregulatory and anti-inflammatory effects by reducing many pro-inflammatory cytokines. In addition, *Nigella Sativa* has therapeutic effects on immune disorders, autophagy dysfunction, oxidative stress, ischemia, and inflammation in COVID-19 which has comorbidities such as diabetes, cardiovascular disorders, and coinfection with bacterial and viral pathogens [24]. Supplementation of an oral dose of NSO 500 mg twice daily for 10 days in a sample of adult patients with mild COVID-19 symptoms is associated with a higher percentage of recovery than usual care alone at day 14 of illness [25]. The compounds contained in honey, *Nigella Sativa*, and VCO are able to help reduce symptoms of exhalation in COVID 19 patients, such as anosmia, cough, fatigue, lethargy, and headaches, fever, shortness of breath, cough, and fatigue/malaise [15], [16], [26].

5. Conclusion

Providing COVID-19 herbal supplements in the form of habatussauda, honey, and VCO or Sumbawa oil has a very good effect on the recovery of COVID-19 patients. Administration of herbal drug supplement formulations has a significant effect on oxygen saturation and decreased body temperature compared to the control group. All COVID-19 patients who are given herbal medicine supplement formulations to support the treatment of COVID-19.

Compliance with ethical standards

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Disclosure of conflict of interest

The author has no conflict of interest in this research.

Statement of ethical approval

Prospective Participants are invited to participate in this research. All participants received an explanation regarding the purpose of this study, namely to examine The effects of herbal supplementation on lowering temperature and increasing oxygen saturation in COVID-19 patients. Informed consent was obtained from each participant before the study. Participants are allowed to withdraw from this study at any time. The ethical clearance for this research was obtained from the Commission of Health Research Ethics at RSUD Dr. Moewardi/FK UNS Surakarta (Number : 991/XI/HREC/2021).

Statement of informed consent

Prospective Participants were invited and oriented on the purpose of this study, namely to examine The Effects of herbal supplementation on lowering temperature and increasing oxygen saturation in COVID-19 patients. Informed consent was obtained before the study and the participants were allowed to withdraw at any time.

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