

(RESEARCH ARTICLE)



Consumption of herbal teas decrease health problems (fatigue, cough and throat problems, skin problems, and stomatitis)

Zauhani Kusnul*, Erwin Yektiningsij and Dwi Rahayu

Nursing Department of Stikes Pamenang. Kediri, Esat Java, Indonesia.

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Abstract

Prevention plays a pivotal role within the healthcare sector, highlighting its significance. Numerous natural products have been extensively studied for their positive effects on enhancing health and boosting the body's resistance. Notable examples include *Phyllanthus urinaria*, *Moringa*, *Centella Asiatica*, and green tea leaves. In this study, we have combined these various proven natural ingredients, known for their immunomodulatory properties, in the form of herbal tea preparations. The primary objective of this research was to gather evidence and ascertain the benefits of consuming herbal tea on overall health status. To accomplish this, an experimental study employing a pre-post-test design was conducted. The health condition of the participants was evaluated both before and after the administration of herbal tea treatment. The health status indicators encompassed general health issues, such as fatigue, cough and throat problems, skin problems, and thrush. Each health problem was assessed based on categorized frequency levels: never, rarely, sometimes, often, or always/almost always. After receiving detailed explanations and providing their consent to participate, all respondents were provided with herbal tea packages and instructed to consume them regularly, once a day, for a duration of 21 days. Changes in their health status were closely monitored and recorded over the course of one month.

Keywords: Herbal tea; Fatigue; Cough and throat problems; Skin problems; Stomatitis

1 Introduction

The COVID-19 pandemic has imparted a valuable lesson to all of us. It has led to positive developments in awareness and healthy living behaviors. At an individual level, one crucial aspect of enhancing health status is focusing on boosting the body's resistance and immunity [1]. Extensive research has been conducted on various natural products, highlighting their potential in enhancing body resistance and immunity. Examples of such products include *Phyllanthus urinaria* leaves [2], *Moringa* leaves [3], *Centella asiatica* leaves [4], and green tea leaves [5].

Phyllanthus niruri is a native plant found in tropical Asia and is widely distributed across the region, including Indonesia. Empirical evidence suggests that *Phyllanthus urinaria* possesses various medicinal properties, acting as antioxidants, antibacterial agents, antihepatotoxic substances, antipyretics, antitussives, anti-inflammatory agents, antivirals, diuretics, expectorants, hypoglycemics, and immunostimulants [2].

Moringa leaves contain a diverse range of micronutrients, including thiamin, riboflavin, niacin, beta carotene, calcium, iron, phosphorus, magnesium, zinc, and vitamin C. These nutrients offer an alternative to multiple micronutrient supplements and aid in improving the nutritional status of pregnant women. Additionally, *Moringa* is rich in protein, amino acids, minerals, vitamins, antioxidants, and anti-inflammatory compounds [3].

* Corresponding author: Zauhani Kusnul

Centella asiatica (L) Urban, also known as *Centella asiatica*, is another plant that possesses numerous benefits. It serves as a urine laxative, thrush medicine, fever reducer, appetite enhancer, and more. The immunomodulatory properties of *Centella asiatica* have been attributed to its ability to enhance lymphocyte proliferation [4].

Aligned with the circular letter issued by the Minister of Health in Indonesia, which emphasizes the utilization of traditional medicines for health maintenance, disease prevention, and healthcare, our research team has developed herbal-based tea formulations with the aim of boosting body resistance and immunity. This formulation takes into account the local tradition of consuming tea. Tea is the beverage most often consumed after water [5].

which is deeply ingrained in everyday life and requires no special storage techniques. By considering these factors, we anticipate that the herbal tea preparations for immunity will be more readily embraced by individuals compared to other dosage forms like pills or capsules, which may convey a medicinal connotation. The introduction of herbal-based tea as an alternative solution holds great potential for community acceptance and utilization

The herbal tea preparation underwent organoleptic testing to determine the formula that best suited the respondents' taste preferences. Additionally, laboratory tests and analyses were conducted to assess the total phenol levels and antioxidant activity of the tea. The objective of this study was to gather evidence and information regarding the potential benefits of consuming herbal tea on various health parameters, including fatigue, cough and throat problems, skin problems, and stomatitis.

2 Research methods

2.1 Herbal tea-making procedure

All tea leaves were thoroughly washed and subsequently dried for a period of 24 hours at room temperature. Following this, the leaves were further dried in an oven at a temperature of 60°C for a duration of 5 hours. Once fully dried, each leaf was carefully crushed using a dry blender and sifted through a mesh with a size of 16. The herbal tea blend was formulated with the following composition: 30% green tea, 40% moringa, 15% *Phyllanthus urinaria*, and 15% *Centella asiatica*. Subsequently, the blend was accurately measured to 2 grams and packed into tea bags, which were securely sealed using a sealer. Finally, the tea bags were carefully placed inside aluminum pouches for proper packaging.

2.2 Research procedure

This research constitutes an experimental study employing a pretest-posttest approach. A total of 38 volunteers, who expressed their willingness to participate, were involved in the study. Prior to commencing the research, all respondents were provided with a detailed explanation regarding the research objectives and their corresponding responsibilities. The participants were then required to gather data pertaining to prevalent health issues commonly experienced within the community (without diagnosing any specific diseases), while also describing their immunological condition. The health problems considered encompassed fatigue, cough and throat problems, skin complaints/problems, and canker sores. Each health problem was assessed based on the frequency of occurrence, categorized as never, rarely, sometimes, often, or always/almost always. Subsequently, all participants were provided with herbal tea packages and instructed to consume them regularly, once a day, for a duration of 21 days. Changes in the participants' health status were monitored and recorded over a span of one month, with data collection conducted in June 2021.

3 Results

In this study, we involved 38 respondents/panelists from the general public consisting of 15 men, and 23 women, age range 15-59 years, and professions as students, employees/private, civil servants, and housewives.

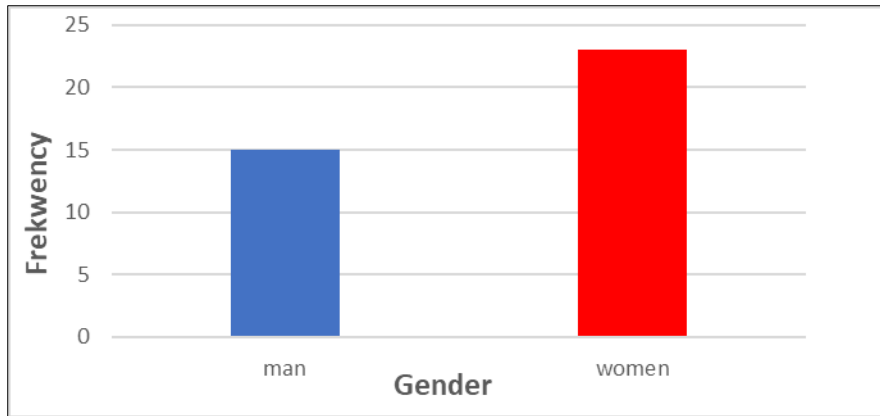


Figure 1 Gender distribution of respondents

The number of male and female respondents in this study was almost equal, with 15 male respondents and 23 female respondents.

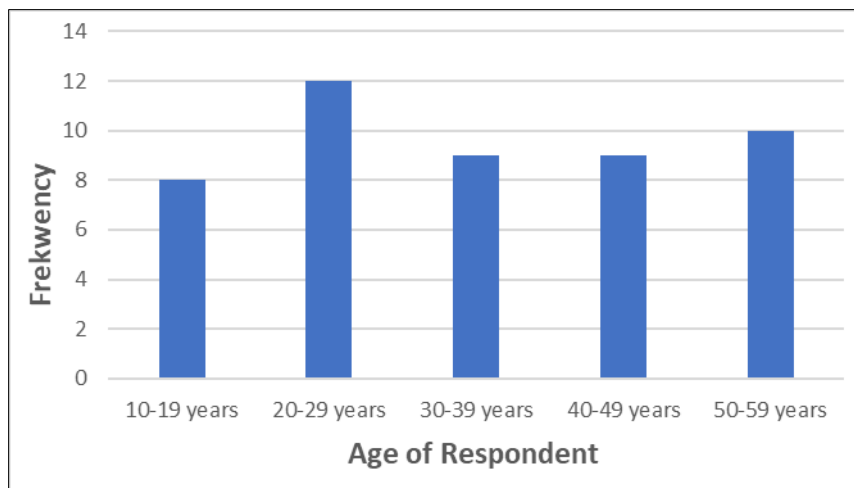


Figure 2 Age distribution of respondents

The age distribution of the respondents in this study reveals a predominant presence of individuals within the 20-39 age range. However, the remaining age groups exhibit a relatively balanced representation, encompassing individuals across diverse age categories ranging from teenagers to adults and the elderly.

The results of the analysis of the effect of herbal tea consumption on health status are as follows:

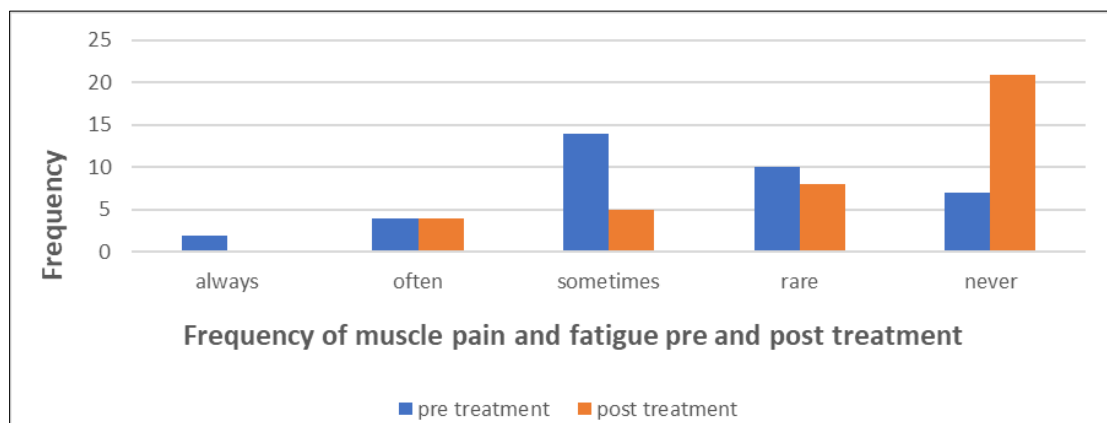


Figure 3 Distribution of muscle pain and fatigue of respondents before and after herbal tea consumption

Figure 3, presented above, provides a clear and evident depiction of the notable shift in the prevalence of muscle pain and fatigue among the respondents prior to and following regular consumption of herbal tea. The data demonstrates a significant decrease in the number of participants who reported experiencing muscle pain and fatigue consistently, frequently, or occasionally before incorporating herbal tea into their routine. In contrast, there is a substantial increase in the number of respondents who indicated never having experienced muscle pain and fatigue after incorporating regular consumption of herbal tea.

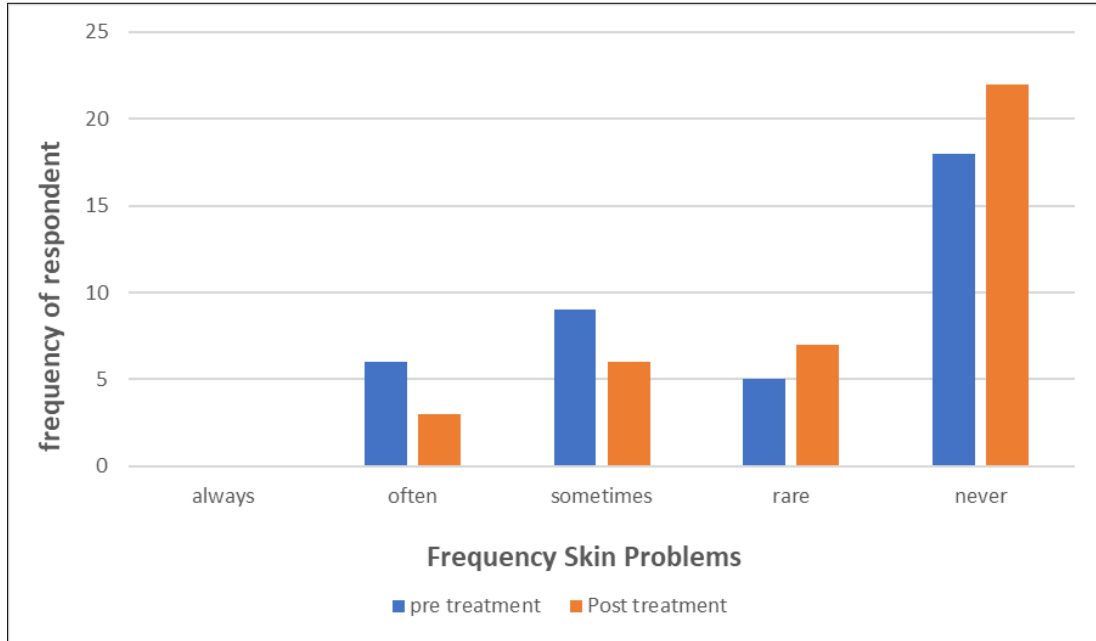


Figure 4 Distribution of skin problems of respondents before and after herbal tea consumption

Figure 4, depicted above, provides a clear and evident representation of the substantial transformation observed in the occurrence of skin problems among the respondents prior to and following regular consumption of herbal tea. The data demonstrates a remarkable decrease in the number of participants who reported experiencing skin problems frequently or occasionally before incorporating herbal tea into their routine. Conversely, there is a significant increase in the number of respondents who indicated experiencing skin problems rarely or never after embracing regular consumption of herbal teas

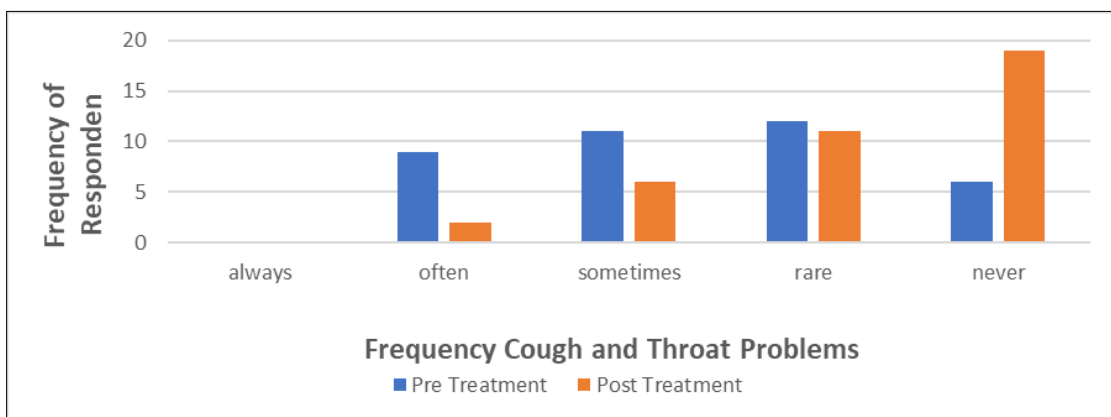


Figure 5 Distribution of Cough and throat problems of respondents before and after herbal tea consumption

Figure 5, presented above, provides a clear visual representation of the notable shifts in the occurrence of cough and throat problems among the respondents before and after incorporating regular consumption of herbal tea. The data reveals a significant decrease in the number of participants who reported experiencing throat and cough problems frequently, occasionally, or infrequently prior to integrating herbal tea into their routine. Moreover, there is a

substantial increase in the number of respondents who indicated that they had never encountered throat problems or coughs after incorporating herbal teas into their regular consumption practices

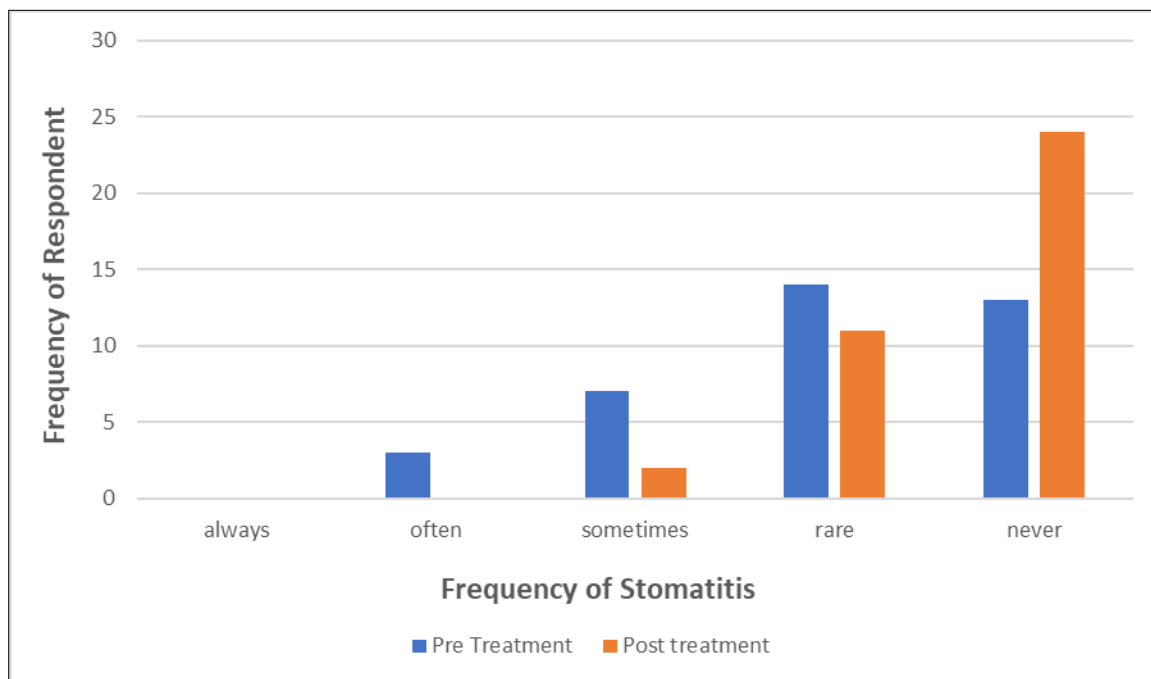


Figure 6 Distribution of stomatitis of respondents before and after herbal tea consumption

Figure 6, depicted above, provides a clear depiction of the noteworthy alteration in stomatitis occurrences among the participants before and after regular consumption of herbal tea. The data reveals a substantial reduction in the number of respondents who frequently, occasionally, or infrequently experienced stomatitis prior to incorporating herbal tea into their routine. Conversely, there is a significant increase in the number of respondents who reported never having experienced stomatitis after incorporating herbal tea into their regular consumption habits.

4 Discussion

The findings of this study align with numerous scientific publications that explore the health benefits of various natural ingredients. Extensive research has been conducted on several natural products, including *Phyllanthus urinaria* leaves, *Moringa* leaves, *Centella asiatica* leaves, and green tea leaves, all of which have shown positive effects in boosting the body's immune system and resilience.

Moringa oleifera is a plant that has been studied for its immunomodulatory activity. A study on Wistar albino rats found that the methanolic leaf extract of *M. oleifera* had an immunostimulatory effect on both the cell-mediated and humoral immune systems [6]. The extract was found to increase neutrophil adhesion and delayed-type hypersensitivity reaction (DTH), as well as hemagglutination antibody titer.

In the murine experimental model, methanolic extract of *Moringa oleifera* administration improve adhesion and phagocytic activity of neutrophil. Moreover, it enhances the secretion of immunoglobulins (antibodies) of interest in the rescue of neutropenia induced by cyclophosphamide. Overall, the search results suggest that *M. oleifera* has immunomodulatory activity and can stimulate the immune system through cellular and humoral immunity in animal models. However, more research is needed to fully understand the mechanisms behind this activity and its potential applications in humans. [7].

In summary, the findings from the search indicate that *Moringa oleifera* possesses immunomodulatory activity, effectively stimulating the immune system through both cellular and humoral immunity in animal models. However, it is important to note that further research is necessary to gain a comprehensive understanding of the underlying mechanisms behind this activity, as well as to explore its potential applications in humans.

Phyllanthus urinaria, a wild plant native to tropical Asia and widespread throughout the region, including Indonesia, has been empirically recognized for its antioxidative, antibacterial, antihepatotoxic, antipyretic, antitussive, anti-inflammatory, antiviral, diuretic, expectorant, hypoglycemic, and immunostimulant properties [2]. *Phyllanthus urinaria*, an herb belonging to the genus *Phyllanthus*, encompasses numerous phytochemical constituents, including abundant alkaloids and phenols, flavonoids, terpenoids, steroids, cardiac glycosides, saponins, tannins, glycosides, and cyanogenic compounds. Analysis has revealed that *P. urinaria* possesses a substantial amount of carbohydrates and dietary fiber. Notably, several significant chemical compounds have been isolated from *Phyllanthus niruri*, such as phyllanthin, hypophyllanthin, niranthin, nirtetralin, phyltetralin, phyllangin, nirphilin, phyllnirurin, and corilagin. These compounds are responsible for various pharmacological activities. Moreover, *P. urinaria* exhibits elevated levels of saponins and tannins, while cyanogenic glycosides are present in lower amounts [8].

The presence of flavonoids in *Phyllanthus urinaria* holds the capability to stimulate the body's immune response. Specifically, flavonoids like rutin and quercetin exhibit properties as anti-carcinogens, functioning as inhibitors of cancer growth. Moreover, the flavonoid quercetin found in *Phyllanthus urinaria* has demonstrated the ability to impede histamine synthesis, a crucial mediator in allergic dermatitis (eczema). *Phyllanthus urinaria* has also exhibited potential in reducing tissue damage among individuals with skin allergies. Additionally, the contents of Nirurin and quercetin within *Phyllanthus urinaria* can serve as effective diuretics. Other components such as phyllanthin, hypophyllanthin, vitamin K, tannins, and resin contribute to the enhancement of the immune system and act as hepatoprotectors [8]. Notably, various countries have utilized *Phyllanthus urinaria* extract as a medicinal plant for treating hepatitis B, and it has been employed as an adjunctive therapy for HIV and AIDS [9]. *Moringa* leaves encompass a plethora of micronutrients, including thiamin, riboflavin, niacin, beta carotene, calcium, iron, phosphorus, magnesium, zinc, and vitamin C. These constituents offer a promising alternative to the utilization of multiple micronutrient supplements for enhancing the nutritional status of expectant mothers. Moreover, this plant boasts an abundance of protein, amino acids, minerals, vitamins, antioxidants, and anti-inflammatory properties [10; 11]. The significance of various micronutrients in bolstering the immune system cannot be understated, as optimal immune function necessitates the presence of both macro and micronutrients. Additionally, *Moringa* exhibits high levels of antioxidants, which have been traditionally employed as a form of traditional medicine, showcasing immense potential in the realm of alternative healthcare due to its rich nutritional profile. Furthermore, *Moringa* leaves have historically been employed in the treatment of hyperglycemia, inflammation, bacterial/viral infections, and cancer [12].

Centella asiatica is an herbal remedy utilized in traditional Chinese medicine. Its primary active constituents include asiaticoside, asiatic acid, madecassoside, and madecassic acid. As previously mentioned, *C. asiatica* and its triterpenoids possess a broad range of medicinal properties. In both laboratory and animal studies, *C. asiatica* and its triterpenoids have demonstrated therapeutic and alleviating effects on various systemic ailments. *Centella asiatica* is known to contain an abundance of bioactive fractions and compounds that possess diverse pharmacological properties, including immunomodulatory activities. In a study conducted by Zhang et al., the effects of madecassic acid on subpopulations of CD4+ and CD8+ T lymphocytes in tumor-bearing mice were examined using flow cytometry analysis. The results demonstrated that madecassic acid significantly increased the subpopulations of CD4+ and CD8+ T lymphocytes, while also enhancing the secretion of pro-inflammatory cytokines, such as IFN- γ and IL-4, in comparison to the untreated group. Based on these findings, it was suggested that the administration of madecassic acid bolstered the immune defense system of the rats against tumorigenesis. This effect was achieved through the modulation of both T-helper 1 (Th1) and T-helper 2 (Th2) mediated immune responses [13].

The preliminary study conducted by Mali and Hatapakki revealed that different concentrations (25, 50, and 100 mg/mL) of ethanolic leaf extract from *C. asiatica* significantly augmented the migration activities of neutrophil cells. This increase was observed as the cells migrated from the upper compartment to the lower surface of the filter in a dose-dependent manner. Moreover, the extracts exhibited a similar effect on the phagocytosis activities of neutrophils, as evaluated through the slide method. The phagocytic index of neutrophil cells was enhanced by the extracts in comparison to the untreated group [14].

The immune system plays a vital role in safeguarding human health by defending the body against invading pathogens and combating diseases [15]. Even a minor infection can have severe consequences when the host's immune system is impaired. Moreover, it is widely believed that alterations in the host's immune system can initiate the development of abnormal conditions such as cancer. To address this issue, one approach is to modify the host's immune responses by enhancing the system's capacity to prevent or eliminate disease-causing agents [16]. Various agents are employed to modulate immunological parameters, including nonspecific host defenses, humoral antibody responses, and cell-mediated immune responses, which are necessary for controlling numerous diseases. This process of modifying immune responses, which involves adjusting the immune system's alertness to combat diseases, is referred to as immunomodulation [17].

The combination of various nutritious natural ingredients supports each other to produce a positive effect on immunity. Furthermore, with good immunity various health problems will decrease. This is in line with theory that explain the important role of the immune system in disease processes. The immune system plays a vital role in safeguarding human health by defending the body against invading pathogens and combating diseases. Even a minor infection can have severe consequences when the host's immune system is impaired. Moreover, it is widely believed that alterations in the host's immune system can initiate the development of abnormal conditions such as cancer. To address this issue, one approach is to modify the host's immune responses by enhancing the system's capacity to prevent or eliminate disease-causing agents. Various agents are employed to modulate immunological parameters, including nonspecific host defenses, humoral antibody responses, and cell-mediated immune responses, which are necessary for controlling numerous diseases. This process of modifying immune responses, which involves adjusting the immune system's alertness to combat diseases, is referred to as immunomodulation.

The use of immunomodulators for the prevention or treatment of diseases related to defective immune responses has been a subject of significant attention for a considerable period. The primary objectives of immunomodulators are to either enhance immune responses, as applied in infectious and immunodeficiency diseases, or suppress them, as a treatment for inflammation and autoimmune diseases. Additionally, immunostimulants play a crucial role as adjuvants to chemotherapy for various diseases. In summary, the immune system's importance in maintaining human health is undeniable. Manipulating immune responses through immunomodulation and utilizing immunostimulants as adjuvants are strategies aimed at improving the body's ability to combat diseases caused by immune deficiencies or abnormalities [18].

5 Conclusion

The consistent consumption of herbal tea formulations enhances an individual's health condition by alleviating symptoms such as fatigue, cough, throat ailments, skin issues, and canker sores. Embracing herbal teas as a dietary choice presents a viable alternative for promoting overall well-being on a daily basis.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

No conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

- [1] Nilashi M, Samad S, Shahmoadi L, Ahmadi H, Akbari E, Rashid TA. The COVID-19 infection and the immune system: The role of complementary and alternative medicines. *Biomed Res [Internet]*. 2020;31(3):1–4. Available from: <http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=143844623&site=ehost-live>
- [2] Atmadja TFA, Yuniarto AE. Formulation of Phyllanthus niruri Tea Fungtional Drink with High Antioxidant). *J Action Aceh Nutr J*. 2019;4(4):142–8.
- [3] Hasriani S, Nontji W, Hadju V, As S, Singrang AW, Bahar B, et al. Efek Teh Daun Kelor (Moringa Oleifera Tea) terhadap Kadar Leukosit Ibu Hamil Effects of Moringa Oleifera Tea on Leukocyte Levels of Pregnant Women Kabupaten Sidenreng Rappang mulai. 2020;XIII(Ii):2–5.
- [4] Khusnawati NN, Pramono S, Sasmito E. 2016. Effect Of 50% Ethanolic Extract Of Pegagan Herb (Centella asiatica (L.) Urban) On Cell Proliferation Of Lymphocytes In Balb/c Male Mice Induced By Hepatitis B Vaccine. *Maj Obat Tradis*. 2016;20(3):164–9.
- [5] Peristiowati Y, Kusnul Z (2020). Synthesis and characterization of green tea paste nanoparticles based on wet milling. *Journal of Advanced Pharmaceutical Technology & Research*. 11(2).

- [6] Nfambi Y, Godfrey S. Bbosa,* Lawrence Fred Sembajwe, James Gakunga, and Josephine N. Kasolo (2015). Immunomodulatory activity of methanolic leaf extract of *Moringa oleifera* in Wistar albino rats. *J Basic Clin Physiol Pharmacol*. 2015 Nov 1; 26(6): 603–611.
- [7] Sudha P, Asdaq SMB, Dhamingi SS, Chandrakala GK. Immunomodulatory activity of methanolic leaf extract of *Moringa oleifera* in animals. *Indian J Physiol Pharmacol*. 2010 Jun;54(2):133–40.
- [8] Danladi, S., M. A. Idris, and I. I. Umar. 2018. Review on Pharmacological Activities and Phytochemical Constituents of *Phyllanthus niruri* (Amarus). *The Journal of Phytopharmacology*, 7: 341-348.
- [9] Nisar MF, He J, Ahmed A, Yang Y, Li M, Wan C. Chemical components and biological activities of the genus *Phyllanthus*: A review of the recent literature. *Molecules*. 2018;23(10).
- [10] Udikala M, Verma Y, Sushma S, Lal S. Phytonutrient and Pharmacological Significance of *Moringa oleifera*. *Int J Life-Sciences Sci Res*. 2017;3(5):1387–91.
- [11] Gopalakrishnan L, Doriya K, Kumar DS. *Moringa oleifera*: A review on nutritive importance and its medicinal application. *Food Sci Hum Wellness* [Internet]. 2016;5(2):49–56. Available from: <http://dx.doi.org/10.1016/j.fshw.2016.04.001>
- [12] Kusmardika DA. Potensi Aktivitas Antioksidan Daun Kelor (*Moringa Oleifera*) Dalam Pencegahan Kanker. *Stikes Siti Hajar Medan* [Internet]. 2020;2(1):46–50. Available from: <http://jurnal.stikes-sitihajar.ac.id/index.php/jhsp/article/view/33>
- [13] Sharma, K. R.; Adhikari, A.; Jabeen, A.; Dastagir, N.; Kalauni, S. K.; Choudhary, M. I.; Pokharel, Y. R. *Biochem. Pharmacol*. 2015, 4, 1000182.
- [14] Mali, R. G., & Hatapakki, B. C. (2008). An in vitro study of effect of *Centella asiatica* on phagocytosis by human neutrophils. *International journal of pharmaceutical sciences and nanotechnology*, 1(3), 297-302.
- [15] Lambrecht, B. N.; Hammad, H.(2014). Innate Immune Cells to the Help. *Immunity* 2014, 40, 313-314.
- [16] Razali, F. N.; Sinniah, S. K.; Hussin, H.; Zainal Abidin, N.; Shuib, A. S. (2016). Tumor suppression effect of *Solanum nigrum* polysaccharide fraction on Breast cancer via immunomodulation. *Int. J. Biol. Macromol*. 2016, 92, 185-193.
- [17] Rasheed, H. M. F.; Rasheed, F.; Qureshi, A. W.; Jabeen, Q. J. (2016) The Potential of *Centella asiatica* (Linn.) Urban as an Anti-Microbial and Immunomodulator Agent: A Review. *Ethnopharmacol*. 2016, 186, 244-250.
- [18] Harun NH, Septama AW, Ahmad WANW and Rapeah Suppian R, 2019. The Potential of *Centella asiatica* (Linn.) Urban as an Anti-Microbial and Immunomodulator Agent: A Review. *Natural Product Sciences* 25(2) : 92-102 (2019)