



Original Research

The Effect Of Lime And Honey On Cough Non Pneumonia In Toddlers At Puskesmas Wayabula

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Article Info

Keywords:

Cough, Honey, Lime, Non-pneumonia, Toddlers

Abstract

Cough is a common symptom experienced by toddlers, often caused by viral infections, allergies, or environmental irritants. Traditional remedies, such as a combination of lime and honey, are widely used in Indonesia due to their antimicrobial and anti-inflammatory properties. This study aimed to evaluate the effectiveness of lime and honey therapy in reducing cough symptoms in toddlers without pneumonia. A pre-experimental design with a pre-test and post-test approach was employed, involving 30 toddlers aged 1-5 years at Puskesmas Wayabula. The sampling method was purposive, ensuring relevance to research objectives. Data were analyzed using the Wilcoxon test with $p < 0.05$.

Results showed that before therapy, 100% of respondents experienced cough. After therapy, only 30% continued to cough, while 70% experienced symptom resolution, indicating a significant improvement ($p = 0.000$). The mean respiratory rate (RR) decreased from 36.16 (SD=2.45) before therapy to 34.00 (SD=3.37) after therapy, demonstrating a reduction in cough severity and improved respiratory function. The findings confirm that lime and honey effectively alleviate cough symptoms and lower respiratory rates.

This study supports the use of lime and honey as a natural, cost-effective remedy for non-pneumonia cough in toddlers. However, individual variations in response and the potential risks of honey for children under one year should be noted. Further research is needed to explore the broader applicability of this therapy and to validate its safety and efficacy across diverse populations.

1. Introduction

Cough is one of the common symptoms often experienced by toddlers and can be caused by various factors, including viral infections, allergies, and irritation. According to data from the World Health Organization (WHO), cough is one of the main reasons for doctor visits in children worldwide. Cough in toddlers often becomes a major concern for parents, especially when it lasts for a long time or is accompanied by other symptoms such as fever and difficulty breathing (Riswahyuli et al., 2019).

According to the Basic Health Research (Riskesdas) 2018, around 20% of children in Indonesia experienced cough in the last month. Cough not caused by pneumonia is often due to viral infections, allergies, or environmental irritants. Therefore, it is important to seek effective and safe treatment for toddlers. Prosentase anak sakit usia di bawah 5 tahun berdasarkan data PBS sejumlah sekitar 17% dari total keseluruhan jumlah penduduk anak-anak baik yang menjalankan rawat inap maupun yang rawat jalan.

Cough in toddlers can be caused by various factors, including viral infections, allergies, and environmental irritants. Viral infections, such as flu and colds, are the most common causes of

cough in children. WHO data shows that around 80% of cough cases in children are caused by viral infections. In addition, allergies to dust, pollution, and pollen can also trigger cough, especially in children with a history of asthma or allergies (Mandal & Mandal, 2011).

Cough management can be done pharmacologically and non-pharmacologically. In pharmacological therapy, the drugs given are usually to relieve and treat cough symptoms from the antitussive, expectorant and mucolytic groups (Febrianti et al., 2019). While in non-pharmacological therapy, including chest physiotherapy which functions to clean the bronchial so as to improve lung function and can breathe well (Toorani, 2019), acupuncture therapy which can affect the duration of coughing (Shobah et al., 2024), infrared therapy or herbal therapy by providing one of them, namely honey (Gustina, 2014).

Honey is a natural liquid produced by bees from plant nectar (floral nectar), other parts of the plant (floral nectar extract) or insect excretions. In general, honey has a sweet taste, but some have a bitter or sour taste, depending on the nectar sucked by the honey (Raisa et al., 2018).

In Indonesia, cough not accompanied by pneumonia is often treated with traditional methods, one of which is the use of natural ingredients such as lime and honey. Lime (*Citrus aurantiifolia*) is known to have antimicrobial and anti-inflammatory properties, while honey (*Apis mellifera*) has long been used as a traditional remedy for its ability to relieve cough and speed up the healing process. Lime is known to be rich in vitamin C and antioxidants that can help boost the immune system. Honey, on the other hand, has antimicrobial properties and can soothe throat irritation. Jeruk nipis mengandung vitamin C dan minyak atsiri yang dapat meredakan iritasi pada saluran pernapasan, membantu mengontrol frekuensi batuk, serta memperbaiki fungsi pernapasan (Bandaiphet & Kennedy, 2004).

Some other studies also show that lime contains vitamin C and flavonoids that can boost the immune system, while honey contains anti-inflammatory and antibacterial compounds that can soothe throat irritation (Kompas, 2022). The combination of these two ingredients is believed to have a positive effect in relieving cough in toddlers, especially those not caused by pneumonia (Paul et al., 2007; Rokhaidah et al., 2015).

However, despite many claims of its benefits, there is still limited scientific research on the effects of lime and honey on cough in toddlers. Previous research indicates that honey can reduce cough frequency and improve sleep quality in children with cough (Toorani, 2019).

The use of lime and honey as a traditional treatment for cough is not new. In various regions in Indonesia, this combination has long been used as a remedy for relieving cough. A study by Kusumawati et al. (2020) shows that 75% of parents in Yogyakarta choose to use traditional remedies rather than chemical drugs to treat their children's cough. This indicates a high level of trust in the effectiveness of natural ingredients in treatment.

However, despite many parents using lime and honey, there are concerns about their safety and effectiveness. Some studies suggest that honey is not recommended for children under one year of age due to the risk of botulism. Therefore, it is important to clearly understand the benefits and risks of using lime and honey to relieve cough in toddlers, and the combination of these two ingredients is expected to provide greater benefits in treating cough in toddlers and to encourage further research in the field of traditional medicine.

2. Research Method

This research is a quantitative study aimed to evaluate the effects of giving lime and honey on cough symptoms in toddlers who do not have pneumonia. This type of research was chosen because it can provide objective and measurable data on the effectiveness of the intervention carried out. The research design used is pre-experimental design with a pre-test and post-test approach. In this design, the subject group will be measured for cough symptoms before and after the intervention. The population in this research is toddlers aged 1 to 5 years who have non-pneumonia cough and are treated at several health centers in Puskesmas Wayabula. The sampling technique used in this research is purposive sampling, which is the selection of samples based on specific criteria. By using this technique, researchers can ensure that the samples taken are relevant and in line with the research objectives. The sample size to be used in this research is 30 toddlers. The determination of this sample size is based on calculations using the sample size formula for experimental research. The data obtained will be analyzed using statistical software such as SPSS. The analysis test used is the Wilcoxon test with a significance level set at $p < 0.05$.

3. Results and Discussion

This study involved 30 toddler respondents who were evenly divided by gender. A total of 15 male toddlers (50%) and 15 female toddlers (50%) participated in this study. This shows that the distribution of gender in respondents is balanced, so there is no dominance of one gender in the research group.

In this study, respondents were grouped into two age categories: toddlers aged <36 months: 22 toddlers (73.3%) and toddlers aged >36 months: 8 toddlers (26.7%). The age group of less than 36 months dominated the number of respondents, with almost three times more proportion than the age group of more than 36 months.

In general, coughs that are commonly experienced by children without a cause will heal on their own for approximately 10 days, therefore the management is directed more at reducing symptoms than treating them (Rika Widianita, 2023). Although coughs in children can heal on their own, they must still be watched out for because if they occur too often and for a long time, they are sometimes caused by inappropriate treatment and can even worsen the child's condition (Baidah et al., 2024).

All respondents in this study had a cough before being given honey lime therapy. Of the total 30 respondents, 100% (30 toddlers) had a cough before therapy. There was not a single toddler who did not cough before the therapy was performed. Research conducted by (Adolph, 2016) found that the average frequency of children's cough before giving honey was 10.33 times, and after giving honey decreased to 5.73 times. These results indicate a significant effect of honey administration on reducing cough frequency in children.

After honey lime therapy, there was a significant change in the cough condition of respondents who were still coughing: 9 toddlers (30%) while respondents who no longer cough: 21 toddlers (70%). This shows a decrease in cough symptoms after being given honey lime therapy, with a success rate of 70%. Giving lime and honey therapy is effective in reducing the frequency of coughing in toddlers. Before therapy, 53.3% of children often cough, but after therapy, all children rarely cough (Abuelgasim et al., 2021).

Counseling activities have been carried out with results showing that lime and soy sauce solutions can relieve cough symptoms in children. The combination with honey is also effective because the sweet taste of honey can trigger the production of saliva and mucus to moisturize the throat (Yazia et al., 2020). According to research by (Abuelgasim et al., 2021), the combination of honey and lemon is effective in reducing cough symptoms and improving breathing in children, because it has soothing properties on the respiratory mucosa and stimulates mucus expectoration.

Honey is a syrup-like liquid produced by honey bees. Honey is a natural liquid produced from plant nectar (floral nectar), other parts of plants (floral nectar extract) or insect excretions. Honey is a syrup-like liquid produced by honey bees. Based on the type of nectar sucked, honey can be divided into 2: monoflora and multiflora (polyflora). Monoflora is honey that comes from only 1 type of plant nectar, while multiflora is honey that comes from various types of plant nectar (Kudriah et al., 2021). One of its benefits is to relieve coughs.

Research conducted by (Paul et al., 2007) found a significant relationship between the group given honey and those who were not. In a comparison of honey, DM, and no treatment, parents rated honey as the best for relieving symptoms of nighttime cough and difficulty sleeping in their children due to upper respiratory tract infections. Honey may be a better treatment for cough and difficulty sleeping associated with upper respiratory tract infections in childhood (Paul et al., 2007). Another study that is in line with this is research conducted by (Abuelgasim et al., 2021) which showed that honey was superior to placebo for improving symptoms of upper respiratory tract infections such as cough.

These results can be seen in the following table:

Variable	n	Frequency (%)
Gender		
Male	15	50
Female	15	50
Age		
Less than 36 months	22	23.3
More than 36 months	8	26.7

Cough before therapy		
Yes	30	100
No	0	0
Cough after therapy		
Yes	9	30
No	21	70
Total	30	100

Table 2. Analisis Statistika

Var	n	min	max	Mean	Sd
RR before therapy	30	31	21	36.16	2.45
RR after therapy	30	39	39	34.00	3.37

Tabel 3. Hasil Statistik

Var 1	n	P value	Var 2
Cough before therapy	30	0.000*	Cough after therapy

Wilcoxon

*significant

From table 2 above, it can be seen that the mean before therapy was 36.16 with a standard deviation value of 2.45 while after therapy it was 34.00 with a standard deviation of 3.37. The decrease in mean RR by 2.16 from pre- to post-therapy indicates that the administration of lime and honey is effective in reducing high respiratory rate due to non-pneumonic cough. However, the standard deviation indicates that there is inter-subject variation in response to therapy.

Honey has therapeutic effects in the treatment of respiratory tract infections. A study by (Briosa et al., 2019) showed that honey helped reduce cough symptoms and improve breathing in children with upper respiratory infections. According to a study by (Lissauer & Carroll, 2021), the normal respiratory rate in children under five ranges from 20-30 beats per minute. A higher respiratory rate may indicate the presence of respiratory distress, which is often associated with upper respiratory tract infections or coughing.

Pure honey contains 22 amino acids, 27 minerals including calcium, iron, zinc, potassium, calcium, magnesium and selenium. Honey also has vitamins such as vitamin B-6, thiamine, pantothenic acid and niacin. Honey also contains enzymes including diastase, invertase, riboflavin, catalase, gluco oxidase, acid phosphatase and inulasem and has a very high antioxidant content (Agustin et al., 2018).

4. Conclusion

This study shows that the use of natural ingredient-based therapies such as lime and honey is an effective, low-cost, and easy-to-implement approach in traditional medicine, especially in areas with limited access to modern medical treatment. The promise of progress from the findings of this study lies in its potential to serve as a foundation for further research in the field of traditional medicine. Future research could investigate the molecular mechanism of the combination of lime and honey, determine the most effective dose, and evaluate the safety of its use in a wider population, including children with different health conditions. In addition, longitudinal studies could be conducted to understand the long-term impact of this therapy on respiratory health. The application of the results of this study also has great potential in supporting public health policies that promote the use of evidence-based traditional medicine for the treatment of non-pneumonic cough, both at the household and primary health care levels.

Acknowledgement. Thank you to all respondents in this research contribution.

References

Abuelgasim, H., Albury, C., & Lee, J. (2021). Effectiveness of honey for symptomatic relief in upper respiratory tract infections: A systematic review and meta-analysis. *BMJ Evidence-Based Medicine*, 26(2), 57–64. <https://doi.org/10.1136/bmjebm-2020-111336>

- Adolph, R. (2016). *PENGARUH PEMBERIAN MADU TERHADAP PENURUNAN FREKUENSI BATUK PADA ANAK DI RSIA SITTI KHADIJAH KOTA GORONTALO*. 4, 1–23.
- Agustin, D. A., Nurhaeni, N., & Agustini, N. (2018). Pengaruh Madu terhadap Frekuensi Batuk dan Napas Serta Ronkhi pada Balita Pneumonia. *Jurnal Persatuan Perawat Nasional Indonesia (JPPNI)*, 2(1), 44. <https://doi.org/10.32419/jppni.v2i1.82>
- Baidah, B., Ariani, S. P., & Nahdi, R. Al. (2024). Pendidikan Kesehatan Batuk, Pilek Dan Pijat Common Cold Dalam Upaya Mengatasi Ketidakefektifan Bersihan Jalan Napas Pada Balita. *Sahabat Sosial: Jurnal Pengabdian Masyarakat*, 2(2), 158–165. <https://doi.org/10.59585/sosisabdimas.v2i2.267>
- Bandaiphet, C., & Kennedy, J. F. (2004). Encyclopedia of Common Natural Ingredients used in Food, Drugs and Cosmetics (2nd Edition). In *Carbohydrate Polymers* (Vol. 58, Issue 2). <https://doi.org/10.1016/j.carbpol.2004.05.002>
- Briosa, F., Sousa, R., & Fernandes, R. M. (2019). Honey for acute cough in children. *Portuguese Journal of Pediatrics*, 50(4), 289–292. <https://doi.org/10.25754/pjp.2019.18542>
- Febrianti, Y., Ardiningtyas, B., & Asadina, E. (2019). Kajian Administratif, Farmasetis, dan Klinis Resep Obat Batuk Anak di Apotek Kota Yogyakarta. *Jurnal Pharmascience*, 5(2), 163–172. <https://doi.org/10.20527/jps.v5i2.5798>
- Gustina. (2014). Etnobotani Tumbuhan Obat Yang Digunakan Suku Anak Dalam Di Desa Tabun Kecamatan VII Koto Kabupaten Tebo Jambi. *Jurnal Saintek*, 1(Juni), 52–56.
- Kudriah, K., Zaidi, M., & Nurrohman, N. (2021). MADU DALAM AL-QUR'AN (Studi Penafsiran Qs. An-Nahl: 68-69). *Al Muhafidz: Jurnal Ilmu Al-Qur'an Dan Tafsir*, 1(2), 121–135. <https://doi.org/10.57163/almuhafidz.v1i2.22>
- Lissauer, T., & Carroll, W. (2021). *Illustrated Textbook of Paediatrics Sixth Edition*.
- Mandal, M. D., & Mandal, S. (2011). Honey: Its medicinal property and antibacterial activity. *Asian Pacific Journal of Tropical Biomedicine*, 1(2), 154–160. [https://doi.org/10.1016/S2221-1691\(11\)60016-6](https://doi.org/10.1016/S2221-1691(11)60016-6)
- Paul, I. M., Beiler, J., McMonagle, A., Shaffer, M. L., Duda, L., & Berlin, C. M. (2007). Effect of honey, dextromethorphan, and no treatment on nocturnal cough and sleep quality for coughing children and their parents. *Archives of Pediatrics and Adolescent Medicine*, 161(12), 1140–1146. <https://doi.org/10.1001/archpedi.161.12.1140>
- Raisa, A., Srikandi, S., & Hutagaol, R. P. (2018). OPTIMASI PENAMBAHAN MADU SEBAGAI ZAT ANTI BAKTERI *Staphylococcus aureus*, PADA PRODUK SABUN MANDI CAIR. *Jurnal Sains Natural*, 6(2), 52. <https://doi.org/10.31938/jsn.v6i2.160>
- Rika Widianita, D. (2023). HUBUNGAN PENGETAHUAN IBU DENGAN PEMBERIAN MADU SEBAGAI TERAPI BATUK PADA BALITA DI KELURAHAN BACIRO KECAMATAN GONDOKUSUMAN KOTA YOGYAKARTA. *AT-TAWASSUTH: Jurnal Ekonomi Islam*, VIII(1), 1–19.
- Riswahyuli, Y., Rohman, A., Setyabudi, F. M. C. S., & Raharjo, S. (2019). Evaluation of Phenolic Content and Free Radical Scavenging Activity of Indonesia Wild Honey Collected from Seven Different Regions. *Journal of Food Research*, 8(6), 94. <https://doi.org/10.5539/jfr.v8n6p94>
- Rokhaidah, R., Nurhaeni, N., & Agustini, N. (2015). Madu Menurunkan Frekuensi Batuk pada MalRokhaidah, R., Nurhaeni, N., & Agustini, N. (2015). Madu Menurunkan Frekuensi Batuk pada Malam Hari dan Meningkatkan Kualitas Tidur Balita Pneumonia. *Jurnal Keperawatan Indonesia*, 18(3), 167–170. <https://doi.org/10.1016/j.jki.2015.03.002>
- Shobah, A. N., Noviyanto, F., Fathiyati, Fairuza, F., Mardianti, L., Halimatusyadiah, L., Rizqi, S. M., Saefurrohman, Z. A., & Renata, D. (2024). Evaluasi Terapi Non-Farmakologi Penyakit Batuk dan Pilek di Kelurahan Kemanisan, Curug, Kota Serang. *Jurnal Abdimas Bina Bangsa*, 5(2), 952.
- Toorani, M. Q. (2019). The therapeutic role of honey for treating acute cough in the pediatric population. A systematic review. *Journal of Pediatric and Neonatal Individualized Medicine*, 8(2). <https://doi.org/10.7363/080205>
- Yazia, V., Hasni, H., Nurleny, & Wisdayanti, M. (2020). Penyuluhan Pemberian Kecap Manis dan Air Jeruk Upaya Meredakan Batuk dan Melegakan Tenggorokan pada Anak di Puskesmas Nanggalo Padang. *Jurnal Abdimas Saintika*, 2(2), 1–4. <https://jurnal.syedzasaintika.ac.id/index.php/abdimas/article/view/839>

