

MINYAK BIJI KELOR UNTUK MENURUNKAN NYERI

Amalia Solichati Rizqi^{1*}, Yudha Wahyu Putra²

Program Studi Fisioterapi, Universitas Widya Dharma, Indonesia^{1,2}

*Corresponding Author : amaliasolichati@gmail.com

ABSTRAK

Nyeri adalah rasa tidak nyaman yang dirasakan oleh semua orang. Penanganan nyeri dari waktu ke waktu semakin berkembang. Baik penanganan secara farmakologis, *irtual reality* (VR), maupun dengan menggunakan alat *elektromedis*. Minyak biji kelor bisa menjadi alternative dalam penanganan nyeri yang bisa dan banyak dijumpai di masyarakat. Tujuan dalam penelitian ini adalah untuk mengetahui apakah minyak biji kelor dapat menurunkan nyeri. Metode penelitian ini merupakan penelitian eksperimen dengan pendekatan kuantitatif. Teknik pengambilan sampel menggunakan nonprobability sampling berdasarkan kriteria inklusi dan eksklusi. Sampel yang diambil sebanyak 30 subjek yaitu mahasiswa program vokasi Universitas Widya Dharma (UNWIDHA). Penelitian dilaksanakan di Laboratorium Fisioterapi UNWIDHA ada bulan Juni sampai September 2023. Pengambilan data dengan pengukuran nilai nyeri yaitu dengan melihat nilai ambang nyeri sebelum dan setelah perlakuan menggunakan faradic current. Intervensi yang diberikan adalah pemberian olesan minyak biji kelor pada kulit yaitu 10 cm distal epicondylus lateral. Minyak biji kelor yang dipakai telah dilakukan uji laboratorium dan mendapatkan izin dari BPOM untuk memastikan keamanan pelaksanaan penelitian dengan no izin Tr TR 22079201. Analisis data yang digunakan adalah statistik parametrik yaitu dengan menggunakan uji *Paired T Test* dengan pengukuran data awal berdistribusi normal yang diukur dengan uji normalitas data menggunakan *saphiro wilk*. Hasil berdasarkan uji statistik parametrik menggunakan paired t test didapatkan nilai sig adalah 0.023 yang berarti kurang dari 0.05. Hal ini berarti H₀ ditolak dan H_a diterima yang berarti terdapat perbedaan rata – rata nilai nyeri sebelum dan setelah perlakuan. Kesimpulan penelitian adalah minyak biji kelor dapat menurunkan nyeri

Kata kunci : minyak biji kelor, nyeri, kesehatan masyarakat

ABSTRACT

Back Pain is a feeling of discomfort that is felt by everyone. Moringa seed oil can be an alternative to treating pain, and it is often found in the community. Purpose this research is to find out whether moringa seed oil can reduce pain. Method this research is experimental research with a quantitative approach. The sampling technique uses nonprobability sampling based on inclusion and exclusion criteria. The samples taken were 30 subjects, namely vocational program students at Widya Dharma University (UNWIDHA). The research was carried out at the UNWIDHA Physiotherapy Laboratory from June to September 2023. Data was collected by measuring pain values, namely by looking at the pain threshold values before and after treatment using faradic current. The intervention given was applying moringa seed oil to the skin, namely 10 cm distal to the lateral epicondyle. The Moringa seed oil used has been laboratory tested and obtained permission from BPOM to ensure the safety of carrying out research, with permission number TR 22079201. The data analysis used is parametric statistics, namely using the pairwise T test with a normal distribution of the initial data measured by the test. Data normality using Shapiro Wilk. Results based on parametric statistical tests using the paired t test showed that the sig value was 0.023, which means less than 0.05. This means that H₀ is rejected and H_a is accepted, which means there is a difference in the average pain value before and after treatment. Conclusion: of the research is that moringa seed oil can reduce pain

Keywords : moringa seed oil, pain, public health

INTRODUCTION

The Regulation of the Minister of Health of the Republic of Indonesia Number 13 of 2022 states that the strategic plan for 2024 is the realization of comprehensive and quality

primary health services and strengthening community empowerment. Strengthening health starts from within the community, so that community independence and the use of natural products in the community are preventive efforts that can be carried out (Menteri Kesehatan RI, 2022)

One of the common problems that occurs when a patient enters clinics and hospitals is pain (Aisyah, 2017). Pain is one of the most important public health problems due to the disability it causes, which reduces productivity and results in an economic burden on the family. Unfortunately, headache management practices in primary care are still inadequate, both in terms of diagnosis and management of pain problems (Haryani et al., 2018). Pain is a common problem that occurs in patients admitted to clinics and hospitals (Aisyah, 2017) Pain is a feeling of discomfort that almost every human being encounters or feels. People generally treat pain by going to clinics, community health centers, or other treatment places (Rizqi, 2021). Pain management that is carried out independently by using herbs or plants that exist in the community is still rarely done by the community, for example, by using the Moringa plant to make Moringa seed oil. This is a plant that is very useful for humans, one of which is for treating pain.

Moringa seed oil is an oil obtained from moringa seed extract. This oil is widely used as an antioxidant and anti-aging agent (Dzakwan M, 2019). Moringa seed oil can be obtained mechanically, such as by pressing, or chemically, such as by solvent extraction. Non-polar solvents can attract the active ingredient (moringa oil), which is used in extraction techniques to produce moringa seed oil. The contents of Moringa seed oil are a saponification number of 171.7–178.3 mg KOH g⁻¹, an iodine number of 65.7–67.5 mg KOH g⁻¹, and an acid number of 0.29–0.37 mg g⁻¹. Moringa seed oil also contains 72% oleic acid (omega 9). Giving moringa seed oil applied to the skin is expected to have a relaxing effect, which can reduce pain (Dising & Pasau, 2021)

The novelty of this research is the development of variables from previous research. This is the latest research that utilizes Indonesian nature, namely using Moringa oleifera Lam seed oil to reduce pain. Previous research related to variables entitled Application of Diadynamic Currents to Reduce Pain², Effectiveness of Retrowalking in Reducing Pain in Elderly People with Knee Osteoarthritis at the Kendal Community Health Center Kerep Kota Malang (Wardoj0 et al., 2021) All about pain pharmacology: what pain physicians should know (Kim K, 2020) and innovative technology using virtual reality in the treatment of pain: does it reduce pain via distraction, or is there more to it?(Gupta, Scott, & Dukewich, 2018)

The overview in the roadmap before 2023 is research in pain management using pharmacological treatment modalities or therapies, electrical stimulation such as the use of diadynamic currents, virtual reality (VR), and exercises such as retrowalking. This 2023 research has an element of novelty: researchers are using Indonesian nature, namely Moringa seed oil, to reduce pain. In 2024, further research will be carried out to examine other herbal products, namely essential oils. The target of this research is to create a prototype for reducing pain based on science and technology by utilizing Indonesian nature from 2025 to 2028. The aim of this research is to find out whether moringa seed oil can reduce pain

METHOD

This research is experimental research with a quantitative approach The research location in this study was carried out at the Physiotherapy Laboratory of Widya Dharma University, Klaten from June to September 2023. The sample was taken by paying attention to the population, namely the Widya Dharma University Klaten Vocational Program students, numbering 110 students. The total sample was 30 respondents. The technique used is random sampling by paying attention to inclusion criteria and exclusion criteria. The inclusion criteria

in this study were healthy subjects, aged 18 -24 years and willing to take part in the research. The exclusion criteria in this study were receiving medical therapy in the last 1 week, complaints of pain during treatment, not taking analgesic medication in the last 1 week.

Data was collected by measuring pain values before and after treatment. Before treatment, the subject's pain value was measured using faradic, which is one method to determine the pain value by looking at the pain threshold value. After measuring the pain value, the research subjects underwent intervention by administering Moringa seed oil to the forearm at a location 7 cm distal to m. medial epicondyle for 20 minutes. After treatment for 20 minutes, pain measurements were taken. The Moringa seed oil used has been laboratory tested and obtained permission from BPOM to ensure the safety of conducting research with permit number TR 22079201

Results of the existing data were processed statistically using a computer and the SPSS application. The results of the data used are the results of pain data before and after treatment. The existing data was tested for normality of the data using the Shapiro Wilk test and then statistical tests were carried out using the paired T test.

RESULT

Table 1. Data Normality Test with Shapiro Wilk

Pain	df	Sig
Pre	30	.063
Post	30	.297

The data shows a normality test with a sig value of 0.063 for the pain value before percussion and a sig value of 0.297 for the pain value after treatment, which is 0.297, which means the data above is more than 0.05. This can be interpreted as indicating that the existing data is normally distributed.

Table 2. Paired Sample Test

	df	Sig
Pre Test – Post Test	29	.023

The data shows that the sig value in the paired sample t test is sig 0.023, which means less than 0.05. This shows that there are differences in pain scores before and after treatment.

DISCUSSION

Changes in the pain threshold value can specifically be interpreted as a decrease in pain . Moringa seed oil used to treat wounds, ulcers, pain, liver disease, heart disease, cancer, etc (Japaries et al.,2023). The use of Moringa seed oil applied directly to the skin can reduce a person's pain score by a mechanism that begins with increasing the pain threshold. The value of increasing a person's pain threshold becomes a person who tends to experience a decrease in pain value

Pain is an unpleasant sensory and emotional experience resulting from tissue damage, either actual or potential or described in the form of such damage. The mechanism of pain generation is based on multiple processes, namely nociception, peripheral sensitization, phenotypic changes, central sensitization, ectopic excitability, structural reorganization, and decreased inhibition. Between the stimulus of tissue injury and the subjective experience of pain there are four distinct processes: transduction, transmission, modulation, and perception. The mechanism of pain can be inhibited if the painful process is stopped or inhibited. The use

of Moringa seed oil can inhibit the process of pain. Moringa seed oil is a class of edible oil derived from the seeds of the Moringa plant which has antioxidant activity (Dzakwan, 2019).

Moringa seed oil contains antioxidants found in Moringa seed oil, making this oil an alternative that can be used to reduce pain. Moringa leaves also contain phytochemical substances such as tannins, steroids, triterpenoids, flavonoids, saponins, anthraquinones and alkaloids. This compound has an anti-inflammatory effect in the body. So the anti-inflammatory effect caused by the compounds contained in Moringa seed oil results in a reduction in pain from the effects of Moringa seed oil (Dising & Pasau, 2021).

Pain can be reduced due to an increase in the pain threshold. An increase in the pain threshold occurs due to vasodilation of blood vessels which occurs due to an external response, namely from this study due to the administration of Moringa seed oil. Vasodilation of blood vessels results in widening of blood vessels which makes the area well nourished (Rizqi, Putra & Yunita, 2023). So that an increase in the pain threshold occurs which causes a person to experience a decrease in pain (Rosadi et al., 2021). Rizqi & Putra in 2021 also stated that a pain mechanism that can increase the pain threshold is a discovery to be applied in pain reduction methods. Moringa seed oil, applied directly, can be used to reduce pain (Ike et al., 2022)

Pain stimuli received by nociceptors in the skin can be of high or low intensity, such as stretching and temperature, as well as tissue lesions. Cells that experience necrosis will release K⁺ and intracellular proteins. An increase in extracellular K⁺ levels will cause depolarization of nociceptors, while protein, in some circumstances, will infiltrate microorganisms, causing inflammation. As a result, pain mediators are released, such as leukotrienes, prostaglandin E₂, and histamine, which will stimulate nociceptors so that dangerous and harmless stimuli can cause pain (hyperalgesia or allodynia) (Bahrudin, 2017). Giving moringa seed oil inhibits the process of pain, so the pain can be reduced.

CONCLUSION

The conclusion of the research is that moringa seed oil can reduce pain. Moringa seed oil can be used as an alternative for the general public as an initial method used to reduce pain

ACKNOWLEDGEMENT

Thank you to everyone who helped with this research. Thank you to LPPM Widya Dharma University (UNWIDHA) and Kementerian Riset Teknologi dan Pendidikan Tinggi Republik Indonesia

REFERENCES

- Aisyah, S. (2017). Manajemen Nyeri Pada Lansia Dengan Pendekatan Non Farmakologi. *Jurnal Keperawatan Muhammadiyah*, 2(1), 2017.
- Bahrudin, M. (2017). Patofisiologi nyeri (pain). *Saintika Medika*, 13(1), 7-13.
- Dising, J., & Pasau, P. (2021). Karakteristik Fisikokimia Minyak Biji Kelor (*Moringa oleivera* L.). *Partner*, 26(1), 1491-1500.
- Dzakwan, M. (2019). Nanoenkapsulasi Minyak biji kelor. *Jurnal ilmiah farmasi Farmasyifa*, 2(2), 84-92
- Gupta, A., Scott, K., & Dukewich, M. (2018). Innovative technology using virtual reality in the treatment of pain: does it reduce pain via distraction, or is there more to it?. *Pain Medicine*, 19(1), 151-159.

- Haryani, S., Tandy, V., Vania, A., & Barus, J. (2018). Penatalaksanaan nyeri kepala pada layanan primer. *Callosum Neurology*, 1(3), 83-90.
- Ike, A., Rizqi, A. S., Sari, R. Y., & Putra, Y. W. (2022). Diagnosis of Musculoskeletal Complaints in The Elderly During The Covid 19 Pandemic. *Halaman Olahraga Nusantara: Jurnal Ilmu Keolahragaan*, 5(1), 285-294
- Japaries, W., Hardi, Y. F., & Ayu, F. D. (2023). Kajian Sistematis Efek Empiris, Farmakologis dan Klinis Terapi Kelor (*Moringa oleifera* Lam.). *An-Najat*, 1(3), 70-84.
- Kim, K. H., Seo, H. J., Abdi, S., & Huh, B. (2020). All about pain pharmacology: what pain physicians should know. *The Korean journal of pain*, 33(2), 108-120.
- Menteri Kesehatan(2022). Peraturan Menteri Kesehatan Republik Indonesia Nomor 13 tahun 2022. Jakarta
- Rizqi, A. S. (2021). Application Of Diadynamic Currents To Reduce Pain. *Midwifery and Nursing Research*, 3(2), 59-62.
- Rizqi, A. S., & Putra, Y. W. (2021). Penyuluhan Kesehatan Penanganan Nyeri Punggung Bawah (Low Back Pain) di Krakitan Bayat Klaten. *Jurnal Pengabdian Magister Pendidikan IPA*, 4(3).
- Rizqi, A. S., Putra, Y. W., & Yunitasari, R. (2023). Case study of physiotherapy management in knee osteoarthritis conditions. *Jurnal Sabhanga*, 5(1).
- Rosadi, R., Antoniyus, Y., Wardojo, S. S. I., Putra, Y. W., & Rahmanto, S. (2021). Gambaran Keluhan Muskuloskeletal Pada Pegawai yang Menggunakan Personal Computer di Rsud Dr. Murjani Sampit. *Jurnal Ilmiah Fisioterapi*, 4(02), 8-15.
- Wardojo, S. S. I., Febrianty, R., Amanati, S., & Putra, Y. W. (2021). Efektivitas Retrowalking Terhadap Penurunan Nyeri Pada Lansia dengan Knee Osteoarthritis di Puskesmas Kendal Kerep Kota Malang. *Jurnal Fisioterapi dan Rehabilitasi*, 5(2), 114-118.