

Effectiveness of Topical use of Onion and Ginger for Joint Pain

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Abstract

Introduction: Onion and ginger have been widely used as painkillers empirically. Its use is always associated with administration by mouth rather than application to the skin. Elderly people often experience joint pain in connection with their aging condition or because of the disease they suffer. **Objective:** This literature study is to determine the effectiveness of giving onion and ginger as pain relievers in topical administration to joint pain areas. **Method:** literature study with inclusion criteria, namely: articles including primary literature, articles in English or Indonesian, articles containing onion for topical joint pain, articles containing ginger for topical joint pain, research articles available in full text, and articles in the form of original articles. **Result and Discussion:** Three journals were found with a total of 101 elderly respondents suffering from joint pain. Given shallot compresses, 10% and 20% ginger cream, and ginger plaster Measurement of the pain scale by means of the visual analog scale and the WOMAC questionnaire The results showed that all groups of shallot compresses, 10% and 20% ginger cream, and ginger plaster reduced the joint pain of elderly respondents compared to the control group. **Conclusion:** Based on the literature study conducted, it is concluded that the administration of onion and ginger is effective for reducing joint pain in the elderly in all types of topical administration, whether given in the form of compresses, extract creams, or plasters.

Keywords: Elderly; Ginger; Joint Pain; Onion; Topical;

Introduction

Pain is a condition where a person feels an uncomfortable or unpleasant feeling caused by tissue damage, injury, or tissue that has the potential to be damaged or impaired in function. Pain is associated with many diseases. Many diseases can cause pain in the innervation, such as HIV infection, herpes, injury, cancer, diabetes, autoimmune diseases, nerve root compression in the spine, diabetes, vitamin B6, B12 deficiency, etc.

Pain arises from the response of nerves that receive pain from both inside and outside the body and then carry the sensation into the brain. Nerve pain is not always accompanied by severe pain but is almost always accompanied by an abnormal level of pain sensitivity in the form of continuous discomfort or unbearable pain. The discomfort can include numbness, heat, tingling, stabbing pain, electric shock, mild stimulation that triggers pain, and tingling. Apart from peripheral nerve damage, damage and injury to the brain and spinal cord also cause nerve pain. The type of nerve pain is also determined by the type of nerve affected.

Acute pain is a short-term sensation that alerts us to an injury. Often, pain is ignored and only considered as a symptom, not as a disease that must be treated so that it becomes chronic pain. Chronic pain is pain that lasts more than 3 months. Your nervous system receives constant pain and soreness signals from the body for months and even years. Chronic pain can cause burning, numbness, slicing, or stabbing. This is due to damage to the nerves. Long-term pain can cause anxiety, depression, painkiller dependency, sleep disturbances, impaired concentration, and headaches. This can hamper daily activities.

According to the National Centers for Health Statistics, an estimated 15.8% million (12%) of adults between the ages of 25 and 74 have joint pain complaints. More than 355 million people in the world apparently suffer from joint pain diseases. That means for every six people in the world, one of them has joint pain. What needs to be a concern is the relatively high incidence of joint pain disease, which is 1–2% of the total population in Indonesia.

Treatment for joint pain has been using NSAIDs and anti-inflammatory steroid drugs. The use of these drugs causes many side effects such as gastric pain, bleeding disorders, and blood acid-base disorders, and prolonged use will cause damage to the liver and kidneys, especially in geriatric and elderly patients who also use many other drugs. It is necessary to find other alternatives for the elderly to treat joint pain without taking medication. The development of the health world today encourages various experts to conduct research related to the treatment of various disease conditions. Pain management is not only pharmacological but can also be non-pharmacologically. The use of herbs from various family medicinal plants (TOGA) such as onion (*Allium cepa* var. *aggregatum*), elderly exercises, and breath relaxation are some examples of pain management that can be done independently by patients (Daelli et al., 2021)

Onions are often used as a flavoring in food or cooking spices and have various medicinal properties (Octaviani et al., 2019). There are secondary metabolites such as flavonoids, tannins, saponins, essential oils, kaemferol, flavonglycosides, fluroglusin, dihydroalliin, cycloalliin, methialiin, quercetin, polyphenols, and sulfur in shallot bulbs

(Utami, 2013). Each of these compounds has pharmacological activity, such as flavonoids in treating cataracts, heart disease, and cancer (Arora et al., 2017), tannins as antioxidants, antibacterials, and antifungals (Octaviani et al., 2019), and saponins as phlegm thinners in cough disorders (Rahayu and Nur, 1996) in (Hasibuan et al., 2020)

Red ginger (*Zingiber officinale* Linn. var. *rubrum*) has many benefits, both on a household and industrial scale, including being used as traditional medicine and modern medicine. Red ginger (*Z. officinale* Linn. var. *rubrum*) has a spicy taste, is warm, and contains several chemicals, including gingerol, flying oil, limonene, alpha-linolenic acid, aspartic acid, beta-sitosterol, starch, caprylic acid, capsaicin, chlorogenic acid, and farnesol. The gingerol compound that gives ginger its spicy flavor and aroma comes from its essential oil content (Setyawan & Tasminatun, 2013). The use of onion and ginger compresses or topically is empirically widely used and can reduce joint pain, especially in the elderly. Therefore, it is necessary to conduct a literature review to determine the comparative effectiveness of using onion and ginger topically or as compresses for joint pain therapy in the elderly.

Method

The process of writing a literature review can be organized sequentially with four steps, namely: (a) identifying the scope of the topic to be reviewed; (b) identifying the most relevant literature in the selected topic area; (c) reviewing the literature and critiquing the selected literature; and (d) writing the review by finding a logical structure to write a concise presentation of the data along with the references used. In this study, a literature search was conducted through several databases, such as Google Scholar, PubMed, and Science Direct. The research was conducted from June 2021 to July 2021

Research Criteria

The inclusion criteria in this literature review are as follows:

1. The article includes primary literature.
2. Article in English or Indonesian
3. Article about onions for topical joint pain
4. Article about ginger for topical joint pain
5. Research articles are available in full text.
6. Original article

Research Variables: Independent variable:

Onion for joint pain topically

Ginger for joint pain topically

Dependent variable:

Effectiveness of Onion for Joint Pain

Effectiveness of ginger for joint pain

Search Strategy: Data Screening

The search strategy used to search for literature using the keywords "onion for joint pain", "ginger for joint pain", "Allium sp. for osteoarthritis" and "Zingiber officinale for osteoarthritis" by using the conjunctions or, not, and screening was conducted on all journals that had been collected from the specified literature, and relevant articles were selected from the literature search results.

Data Extraction and Data Analysis

Data extraction can be done if all eligible data has been classified for all existing data. After the screening process is carried out, the results of this data extraction can be known for sure from the initial amount of data that shows how many are still eligible for further analysis. This research is divided into several stages, namely searching for literature in databases such as Google Scholar, PubMed, and Science Direct, then selecting the selected literature based on inclusion and exclusion criteria, verifying the article to find out whether it is in accordance with the research objectives, and analyzing the data to draw conclusions. In analyzing the data, various literature sources are used, which will be recorded in the research objectives and research results and findings. And the data that has been collected can be distinguished by differences and similarities in findings from journals that have drawn conclusions.

Result and Discussion

Result

There are many journals that prove onion and ginger as anti-pain medications for joint pain. But only 3 journals fit the inclusion and exclusion criteria of this study, where the use is by compress, cream, or plaster. According to Kuswardhani's research (2016), the active compound content of onions, namely kaemferol, has a pharmacological effect as an analgesic. According to the results of Fadlilah's (Fadlilah & Widayati, 2018) research, warm compress therapy also has an effect on reducing joint pain. Another warm compress that can be done using onions. Based on research by Fadlilah and Widayati (2018) with some experimental research, The sample size is 15 people.

The sampling technique was purposive sampling. Ratio pain scale measuring instrument Statistical test: Wilcoxon signed rank test The onion compress was done for seven consecutive days. Based on gender, women experience a significant decrease in pain scale faster because, when pain attacks, women are more cooperative to deal with their pain than men. As evidenced by the data of this study, women experienced a decrease in scale more than men. The average results of the pain scale before and after the onion compress are 5.2 and 2.4, respectively, with a mean difference of 2.8. The bivariate test results obtained a p-value of 0.001. Conclusions and suggestions are that shallot compresses are effective in reducing joint pain. Respondents are expected to apply shallot compresses as a complementary therapy for joint pain.

In Setyawan and Tasminatun's (Setyawan & Tasminatun, 2013) study, using a modern form of ginger extract cream, 36 elderly people were divided into 3 groups: 10%

cream group, 20% cream group, and 0% cream group or without ginger extract. The cream was given to cover the pain in the knee, before and after. After 30 minutes of cream, the pain scale was measured with the Visual Analogue Scale (VAS).

The results showed that 10% and 20% ginger extract cream reduced pain significantly compared to the elderly group, who were only given the base cream. Research by Zuraiyahya et al. (Zuraiyahya et al., 2020) compared a plaster with a combination of ginger and garlic to warm water compresses. 50 osteoarthritis respondents aged 60–90 years, divided into 2 groups randomly given a plaster and a group given a warm water compress. The treatment was given for 7 days, every day for 15 minutes. The results found that the group given a plaster combination of ginger and garlic reduced pain from moderate to mild, while those given warm water compresses had no change in pain improvement.

Table 1

Results of Research on the Use of Onion and Ginger for Joint Pain in the Elderly

Author Name, Year, and Journal Title	Sample	Research Variables	Study Results
Fadlilah, S., Widayati, R.W. 2018. "Effectiveness of Onion Compress on Joint Pain in the Elderly"	15 elderly people with joint pain	Numerical pain scale Pre-test and post-test	Onion compresses are effective in reducing joint pain in elderly respondents who have been given the intervention for 1 week or 7 consecutive times
Setyawan, R.A. and Tasminatun S., 2013. "Effectiveness of Zingiber officinale Linn. var. rubrum Extract Cream as Joint Pain Reducer in the Elderly"	36 elderly people with joint pain who are not taking or using analgesics or NSAIDs	Decreased intensity of joint pain measured by Visual Analogue Scale (VAS) method for 30 minutes.	Z. officinale Linn. var. rubrum extract cream with a concentration of 10% and 20% can reduce the intensity of joint pain in the elderly and a 10% concentration is more effective than a 20% concentration.
Zuraiyahya I.V., Harmayetty H., Ni'mah L. 2020. "Effect of Aleum Plaster Intervention (zingiber officinale and Allium sativum) on Joint Pain in Elderly with Osteoarthritis"	50 elderly osteoarthritis patients	variable: alevum plaster therapy (ginger and garlic) The dependent variable is joint pain in osteoarthritis. The instrument used was the WOMAC (Western Ontario and McMaster Universities Osteoarthritis Index), which consists of three pain subscales.	The intervention of alevum plaster (ginger and garlic) can significantly reduce osteoarthritis joint pain compared to warm water compresses. Alevum plaster is more influential in terms of the pain scale and pain range can decrease joint pain.

Discussion

According to research in Persia, *Allium sativum* and *Zingiber officinale* are very important herbs that have been used in the treatment of osteoarthritis in addition to

Commiphora mukul, *Linum usitatissimum*, *Matricaria chamomilla*, *Nigella sativa*, and *Piper nigrum* and have the potential to be developed as new drugs in the treatment of OA (Karami et al., 2021). Kuswardhani (2016) states that the active compound in onions, namely kaemferol, has a pharmacological effect as an analgesic. Kaempferol also functions as an anti-inflammatory (Aisah & Nurhidayat, 2022).

According to Rachmad et al. (2012), onions are often used as compresses. According to Hasibuan et al (Hasibuan et al., 2020), ethanol extracts of onions contain flavonoids, tannins, saponins, alkaloids, and terpenoids. Onions contain several active substances, namely allisin alin, flavonoids, allyl disulfide profiles, phytosterols, flavols, potassium, pectin, saponin, and tripropanal. Among some of these active substances are flavonoid active compounds that are anti-inflammatory. This active compound is very useful to help heal inflammation due to bruises, burns, or inflammation in internal organs such as arthritis (Fadlilah & Widayati, 2018)

In red ginger, there are natural compounds that are so efficacious for human health when consumed in the right way. There are zingiberin, kamfena, lemonin, borneol, shogaol, sineol, fellandren, zingiberol, gingerol, and zingeron in ginger (Aryanta, 2019). Red ginger water extract and its pulp are proven to have analgesic activity or pain relief 30 minutes after administration, where this is possible due to the content of shogaol and gingerol in ginger (Febriani et al., 2018). Red ginger can reduce the perception of pain in the elderly by diverting their attention, so that the elderly are more focused on the heat produced by red ginger than the pain felt by the elderly, so the use of red ginger is better for reducing pain than the use of drugs that only reduce pain. (Widyastuti, 2013)

Ginger and garlic given as compresses, creams, or plasters on the surface of the skin will work on the body through blood circulation and provide a heat stimulus to the pain pathway. Molecules that come out of ginger and garlic penetrate the epidermis, then enter through the dermis layer, after which they enter the capillary bloodstream and are then carried to various target organs. Ginger and garlic are absorbed into epithelial tissues and inhibit COX-2. Mingetti (2007) found that gingerol extract in plaster can be absorbed well in the human epidermis layer and has an effective response as an anti-inflammatory. This supports the results of the study in Table 1.

Conclusion

Based on the literature study conducted, it is concluded that the administration of onion and ginger is effective for reducing joint pain in the elderly in all types of topical administration, whether given in the form of compresses, extract creams, or plasters.

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