

## Java Chilli Compress (Piper Retrofractum) Is Effective Against Pain Scale In Elderly People With Rheumatoid Arthritis

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### ABSTRACT

**Background:** A health problem often faced by the elderly is rheumatoid arthritis. This disease greatly inhibits a person from carrying out daily activities. Rheumatoid arthritis is one of the common health problems among the elderly and is included in non-communicable diseases that are often experienced by the elderly. The elderly who experiences rheumatoid arthritis experience symptoms of joint pain, aches or tingling, inflammation, joint stiffness in the morning, and joint movement obstacles, which usually often occur in the joints of the hands, elbows, feet, ankles and knees. This can continue continuously and the longer the complaint feels heavier. The onset of pain makes sufferers often afraid to move, because of the pain, activity will be limited. The purpose of the study was to determine the effectiveness of using Javanese chilli compresses on pain scales in elderly people with rheumatoid arthritis.

**Methods:** Quasy experiment with control group design. In the control group, the respondents were given a mixture of crushed Javanese chili with 5 grams of dried chili, which was administered twice in the morning and evening for one week. Total sampling technique, Sample of 32 respondents, using observation sheets and NRS (Numeric Rating scale) pain rating scale. The Independent Test t-test was used to determine the mean difference between the intervention group and the control group.

**Results:** This study showed that the intervention group averaged a pain scale of 3.25 while the control group averaged a pain scale of 6.31. The results of the Independent Test t-Test obtained p values of  $0.000 \leq 0.05$ .

**Conclusion:** Java chilli compress is effective for reducing pain scale in elderly people with rheumatoid arthritis.

**Keywords:** Java Chili Compress, Rheumatoid Arthritis, Pain Scale.

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**Background:** In the elderly, a person's ability and physique will decline and begin with various changes that occur in life, and are characterized by biological deterioration, physical such as reduced vision and hearing, easily tired and attacked by various diseases including hypertension, gout, rheumatism, and other diseases. Rheumatoid arthritis is one of the common health problems among the elderly and is included in non-communicable diseases that often attack the elderly (Yolanda and Febriyanti, 2021). This disease is an autoimmune response disorder, where a person's immune system can be disrupted which destroys joint organs and linings,

especially in the hands, feet, and knees (Nurfitriani and Fatmawati, 2020).

The results of Basic Health Research (Riskesdas) in 2013 showed that the prevalence of rheumatoid arthritis joint disease as much as 11.9% of the total population then decreased in the results of Basic Health Research (Riskesdas) in 2018 to 7.3% of the total population. Rheumatoid arthritis sufferers by group type tend to occur in women, with a prevalence of 34%, Rheumatoid arthritis can affect any age, but compared to young people or children, rheumatoid arthritis is more often experienced in old age. This can happen because the body changes with age, therefore rheumatoid

arthritis in the elderly usually attacks more women than men (Kementerian Kesehatan RI, 2018). The number of patients with rheumatoid arthritis in Indonesia has decreased but the level of awareness and misunderstanding about rheumatoid arthritis is quite high. Most Indonesian people underestimate this disease because it seems to cause no death even though the problems caused greatly inhibit a person from carrying out daily activities.

A person who has rheumatoid arthritis experiences symptoms of joint pain, aches or tingling, inflammation, joint stiffness in the morning, and joint movement obstacles, usually often occurring in the joints of the hands, elbows, feet, ankles, and knees. This can continue continuously and the longer the complaint feels heavier. The onset of pain makes sufferers often afraid to move, because of the pain, activity will be limited (Sari and Masrurah, 2021). The impact of rheumatoid arthritis disease can cause problems and disruptions of comfort and limitations that are visible in mobility to the most feared thing that causes disability and disruption of daily living activities (Sangrah, 2017). When pain and not treated immediately, it will have an impact on bone loss and joint pain. If left longer it will cause adhesions or contractures, joints in the body will become stiff, movement is limited, meiosis occurs in muscles, namely the process of granulation of muscle tissue, unstable conditions, if the road will increase the risk of falling, progressive (worsening) and destructive joint deformities, will cause bone damage and even attack organs that cause loss of ability to function normally and even death early if not treated immediately (Yolanda and Febriyanti, 2021). This research offered a new, more affordable alternative to pharmacological therapy for managing pain caused by arthritis, which had been commonly used until now.

Recommendations for pain management in the elderly according to World Health Organization is a conservative and gradual treatment that aims to reduce perceived side

effects (Maqbool et al., 2021). Patients in managing pain, reducing the occurrence of joint damage, and improving or maintaining the quality of life of sufferers. Effective pain management given to patients, especially the elderly, is by providing non-pharmacological therapy (Octa and Febrina, 2020). Some actions that can be taken to help clients relieve or reduce pain and increase comfort are using distraction techniques, relaxation (deep breathing), massage therapy (efflurange massage), guided imagery, deep progressive muscle relaxation techniques, finger grip relaxation, and compresses. Natural ingredients such as traditional spices compresses using warm water, ginger decoction compresses, lemongrass decoction compresses, Javanese chillies and others can minimize side effects and the risk of complications.

Java chilli or *piper retrofractum* is one of the nine leading plants (Sibyandhita Erhaa Amalia, 2019). Components contained in Javanese chilli such as polyphenols, piperine, flavonoids and essential oils that can provide pharmacological treatment effects include antioxidant activity, treating malaria, antimicrobial, antibacterial, antidiabetic and (androgenic effects) stimulating the development and activity of male reproductive organs. In addition, Javanese chilli (*piper retrofractum*) has many benefits as a spice plant that can be used as a spice in dishes and drinks to get a distinctive spicy and warm taste. In Javanese, chilli is useful as an antipyretic, antioxidant, anti-inflammatory and anti-rheumatic activity found in the content of piperine (Syafitri, 2018). The essential oil on the Java chilli plant (*piper retrofractum*) is efficacious in reducing heat, making sleep sound and anti-inflammatory. The spicy taste of Javanese chillies that warm also improves blood circulation. The spicy and hot taste will work directly to the central nerve where it will cause endorphin secretion which will result in vasodilation (Rivai et al.). The occurrence of vasodilation can increase blood flow to the joints and block the transmission of pain

stimuli to reduce pain in the joints (Yuliatmoko and Febria, 2018).

**Method.** This study is a quantitative study with an experimental Quasy design with a control group pretest-posttest design, meaning that the samples in this study were divided into two groups then observed first then after treatment was given to the intervention group then all samples were observed again (Sumantri, 2015, Nursalam, 2019). The population in this study is based on a preliminary study, namely all rheumatoid arthritis sufferers in the working area of the Kalitanjung Health Center in Cirebon City totalling 32 people, sampling using probability sampling techniques of total sampling type, meaning sampling techniques where the number of samples is equal to the number of population (Nursalam, 2016). In each group, there were 16 people in the control group and 16 people in the intervention group. In the control group, the respondents were given a mixture of crushed Javanese chili with 5 grams of dried chili, which was administered twice in the morning and evening for one week. To identify the level of pain in the respondents, the researcher used the McGill Pain Questionnaire. Before this study took place, the researcher had first fulfilled all the ethical clearance requirements that were needed no: HK.098/III/EC/2023.

### Result and Discussion

**Table 1. Characteristics of respondents by age**

Age	F	%
45-59 th	11	34,4
60-74 th	21	65,5
Total	32	100

**Table 2. Characteristics of respondents by gender**

Gender	F	%
Man	10	31,3
Woman	22	68,8
Total	32	100

**Table 3. Characteristics of respondents by education level**

Education	F	%
Junior High School	14	43,8
High School	12	37,5
College	6	18,8
<b>Total</b>	<b>32</b>	<b>100</b>

**Table 4. Results of pain scale measurement in the intervention group**

Variable	Measurement	Mean	SD	Min-Max	p-Value
Rheumatoid Arthritis Pain	Pretest	6,25	1,807	4-9	<b>0,000</b>
	Posttest	3,25	1,525	1-6	

Statistical data on the results of pain scale measurements in the intervention group obtained mean values and standard deviations before treatment ( $6.25 \pm 1.807$ ) while after treatment mean values and standard deviations ( $3.25 \pm 1.525$ ) with p-values of  $0.000 \leq 0.05$ . This means that there is an average difference between the measurement results before and after applying the intervention group Javanese chilli compress in elderly people with rheumatoid arthritis. The content of Javanese chilli contains atsiri oil and piperine, so it is very good for making medicinal herbs. Java chilli has pharmacological effects such as cardiovascular effects, anti-amoeba, anti-microbial, anti-fungal, anti-diabetic, anti-rheumatism, antioxidant, anti-inflammatory, and analgetic, effects on the respiratory tract and preventive on the liver. The content of piperine compounds as anti-inflammatory activity is through inhibition of cyclooxygenase (COX) enzyme work, especially COX-2 by inhibiting the enzyme activity of COX-2 to reduce prostaglandins that can reduce pain inflammation (Wulandari, 2020). In line with research that has been done by previous researchers who said that giving warm compresses using red ginger can relieve the scale of pain in patients with gout arthritis (Astutik, 2020)

**Table 5. Results of pain scale measurement in the control group**

Variable	Measurement	Mean	SD	Min-Max	p-Value
Rheumatoid Arthritis Pain	Pretest	6,44	1,590	4-9	<b>0,708</b>
	posttest	6,31	1,662	4-9	

Statistical data on the results of pain scale measurements in the control group obtained the mean value before observation was (6.44±1.590) while after observation obtained the mean value (6.31±1.662) with a p-value of  $0.819 \leq 0.05$ . This means that there is no average difference between the results of the two pain scale measurements before and after the control group in elderly people with rheumatoid arthritis. In the control group, respondents were asked to rest and move as usual. The rested body can relieve pain but does not decrease the pain scale and only experiences a slight decrease in pain because rest such as sleeping or sitting still without movement does not stimulate the release of endorphins. These endorphins function to provide an analgesic effect by blocking the process of releasing prostaglandin substances from sensory neurons so that the process of transmitting pain impulses becomes inhibited and pain sensation is reduced (Sari and Masruroh, 2021).

**Table 6. Analysis of the use of Javanese chilli compresses changes in pain scales in elderly people with rheumatoid arthritis.**

Variabel	Measure ment	Group		p-Value
		Intervention Mean rank	Control Mean rank	
Rheumatoid Arthritis Pain	Posttest	3,25	6,31	<b>0,000</b>

Analysis of the use of Javanese chilli compresses on changes in pain scales in elderly people with rheumatoid arthritis is known to have measured pain scales in the intervention group obtained the mean value after treatment was 10.09 while in the control group, the mean value was obtained after observation was 22.91 with a p-value of 0.000

$\leq 0.05$  so that  $H_a$  was accepted, and  $H_o$  was rejected. This means that it can be concluded that there is effectiveness in the use of Javanese chilli compresses in elderly people with rheumatoid arthritis in Kalitangjung, South Kanggraksan Village RT.02 / RW.03.

Javanese chilli contains several important compounds and is used in traditional medicine. Some of the compounds contained in Javanese chillies include cavisin, saponins, polyphenols, essential oils, palmitic acid, tetrahydropeiperic acid, sesamin, piperidine and piperine alkaloids. This is evidenced in research producing data on phytochemical components of Java chilli by obtaining data on phytochemical content contained in nine samples starting from the highest to lowest data consecutively, namely steroids, flavonoids, alkaloids, saponins, tannins (Wulandari, 2020). The presence of tannins in Java chilli fruit extract ranks last, even showing relatively negative results, Piperine is useful as an anti-pyretic, antioxidant, anti-inflammatory and anti-rheumatic activity (Masruroh, 2020). The content of piperine in Java chilli which is about 2% functions as an antioxidant with a mechanism of protecting cells from cancer by binding to proteins in mitochondria to trigger apoptosis without harming normal cells through increased activity of antioxidant enzymes such as superoxide dismutase, catalase, and glutathione peroxidase (Wulandari, 2020).

The effect of essential oil content on Javanese chillies that are efficacious in warming can also improve blood circulation. The spicy and hot taste will work directly to the central nerve where it causes endorphin secretion which will lead to vasodilation. The occurrence of vasodilation can increase blood flow to the joints and block the transmission of pain stimuli to reduce pain in the joints.

**Conclusion and Suggestions.** Based on the results of the analysis of the Independent Test t-Test obtained significant results with p values of  $0.000 \leq 0.05$  so it can be said that Java chilli compress is effective against pain scales in elderly rheumatoid arthritis. The use

of Java chilli compress can be used as an alternative therapy for elderly people with rheumatoid arthritis to complement pharmacological therapy. Javanese chilli compresses can also be used as an alternative implementation in nursing as an enhancer of complementary therapies to reduce pain scales in elderly people with rheumatoid arthritis.

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