



## **Complementary Nursing Intervention of Acupressure and Bay Leaf Extract (*Syzygium polyanthum*) on Reducing Pain among Patients with Arthritis Gout**

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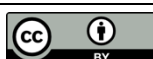
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**Abstract.** Arthritis Gout is a disease affecting the joints characterized. It was characteristic of monosodium urate monohydrate (MSU) accumulation in tissue synovial or other tissues. The prevalence of gouty arthritis in various countries in the world in the last few decades continues to increase. In patients, the main problem that occurs with gouty arthritis is pain and stiffness in the joints that recur, causing reddish swelling around the joints due to increased uric acid. Alternative treatment for arthritis gout in nursing interventions such as acupressure and bay leaf extract (*Syzygium polyanthum*). It could reduce and relieve pain in gout arthritis patients. This study examines the analysis of complementary nursing interventions of acupressure and bay leaf extract (*Syzygium polyanthum*) on pain in arthritis gout clients. This study used true experimental with approach pre-test and post-test control group design. Data collection involved 30 respondents with arthritis gout clients, selected through technique probability sampling with simple random sampling, divided into three groups. The intervention group received the therapy acupressure and bay leaf extract (*Syzygium polyanthum*). The first control group received the therapy acupressure, and the second control group received bay leaf extract therapy (*Syzygium polyanthum*). Pain intensity decreased in the intervention, control one, and managing two groups. But based on the One Way ANOVA test on the pain variable, it showed that the intervention group had the most significant reduction with a value (4.70±1.05) in the control group 1 (3.10±0.99) and control group 2 (3.0±1.05) with a significant p-value of 0.001 (<0.05). Conclusion giving complementary nursing intervention acupressure and bay leaf extract (*Syzygium polyanthum*) effectively reduces pain in arthritis gout patients.

**Keyword:** acupressure, bay leaf extract, pain, arthritis gout.



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## INTRODUCTION

Arthritis Gout is a disease affecting the joints that characterized by the accumulation of monosodium urate monohydrate (MSU) in tissue synovial or other tissues (1). The prevalence of gouty arthritis in various countries worldwide in recent decades continues to increase (2). In Indonesia, the average prevalence of the joint disease is 7.3% based on a doctor's diagnosis, with the highest province being Aceh at 13.3%, followed by Bengkulu and Bali provinces (3). In Aceh, based on health professionals' diagnosis or symptoms, the first rank is Subulul salam district as much as 43.5%. Second is occupied by East Aceh as much as 35%(4). One of the joint diseases is arthritis gout. In general, gouty arthritis incidence is 2-6 times higher in men than in women. The incidence increases with age and the characteristics of BMI (body mass index) (2,5).

Arthritis Gout causes complaints in sufferers such as recurrent joint pain, stiffness in the joints, swelling to redness around the joints due to increased uric acid (6). Normal uric acid levels in adult men range from 3.4 to 7.0 mg/dl, in adult women from 2.4 to 5.7 mg/dl, while in children 2.8-4.0 mg/dl. Suppose uric acid levels are elevated or above standard limits. In that case, there is a risk of hemodynamic disorders such as cardiovascular disease and the risk of metabolic disorders such as kidney dysfunction (7,8). Initially, gouty arthritis only affects one joint for some time, but it will continue to spread to other joints if there is no severe treatment. The joints that are often attacked by gout are the thumb joints, ankle joints, wrists, knees, and other (9). With musculoskeletal joint pain, it affects the limits of the patient's physical activity. It could cause the inability to meet his daily needs and depend on others' help (10).

Pain is an essential sensation for the body that activates the nerves, causing discomfort, distress, suffering. Joint pain is caused by various factors, including environmental, genetic, immune mechanisms, genetic factors, age, and metabolic factors. Metabolic factors such as gout were associated with high uric acid levels in the blood (11,12).

Health services, one of which provides quality nursing services and integrates with the community, are needed in today's health world. It was an essential part of national development, where everyone wants satisfaction in getting services from health services. As in nursing services at the health center, it is vital to provide the first service to patients before the hospital (13).

Pain management in gouty arthritis is carried out by pharmacological administration, usually given to health centers, clinics, or hospitals. But also through non-pharmacological such as complimentary nursing therapy and alternative therapy. Following Permenkes number 26 of 2019, nurses are authorized to carry out complementary and alternative nursing management (14). The use of non-pharmacological interventions is often beneficial for people with arthritis gout. Such acupressure therapy, which is known to have a good reputation in providing primary health care with painless treatment, can traditionally reduce various diseases. Acupressure is also a nurse's independent act in providing nursing care. This action is carried out by delivering massage with pressure at specific points with the fingers, which can produce a relaxing effect to reduce pain (8,15-17).

Acupressure therapy is one method that is often used for patients undergoing heart surgery. The effects obtained include relieving pain, anxiety, fatigue, and tension in patients undergoing heart surgery (18). Giving acupressure therapy among mothers with labor could reduce. Besides that, it also inhibits pain transmission without reducing uterine contractions' frequency, even faster delivery time due to the relaxing and distracting effects of acupressure therapy (19)

One of the acupoints in acupressure for pain relief is the Li 4 point, known as the hegu point. This point acts as a very strong antispasmodic as well as a sedative. This point also serves to eliminate pathogens that cause disease (8, 20-21).

Besides acupressure therapy, herbal therapy using medicinal plants is also used for people suffering from various diseases. One of the plants used as medicine is the bay plant. This plant is native to Indonesia and is well known by the public because it is often used to complement spices in dishes that can add delicacy to dishes because it has a distinctive aroma and an ingredient containing antioxidants (22-24).

Bay leaves are safe for consumption since no toxicity, genotoxic, and teratogenicity in experimental animals (25). Bay leaves (*Syzygium polyanthus*) have various ingredients such as flavonoids, tannins, and essential oils containing citral oil and eugenol, useful as leaf analgesics to relieve pain (26).

Another study on the effectiveness of giving bay leaf extract compared to statin drugs in reducing total cholesterol levels in hypercholesterolemia patients showed that the total cholesterol levels in sufferers after being given bay leaf extract 1 gram once a day for seven days experienced a drastic decrease (27).

A previous study showed a lack of hepatocyte cells in hydropic degeneration, fat degeneration, and necrosis among Wistar strain rats (28). Therefore, the bay leaves are safe for consumption in humans

The calculation of the dose of bay leaf extract used in this study was based on previous studies on cholesterol at a dose of 1 gram per day (27). The use of bay leaves in the form of a dry extract in the form of a solid is obtained by evaporating the active ingredient's solvent. This dry extract usually experiences a shrinkage value of not more than 5% (29). Then put into a capsule according to the procedure and the concentration. Apart from being practical and easy to consume, dry extracts can also last longer than in the bay leaf stew.

Several studies on acupressure and bay leaf extract on pain are still studies where the Cohen's effect size is not in the independent variable's high category (30). Also, no reviews provided acupressure action and concurrent administration of bay leaf extract on pain. The study has not implemented complementary nursing interventions in delivering medical services other than pharmacological drug administration services in this area. Further research is needed to determine the effect of giving acupressure with bay leaf extract as a complementary nursing intervention in arthritis gouty clients.

## **OBJECTIVE**

This study examined the analysis of complementary nursing interventions of acupressure and bay leaf extract (*Syzygium polyanthum*) on pain in arthritis gout clients.

## **METHODS**

A quasi-experimental, pre-test, and post-test, with control group design was applied in this study. The intervention group received acupressure therapy and bay leaf extract (*Syzygium polyanthum*). The first control group received acupressure therapy without bay leaf extract. At the same time, the second control group received bay leaf extract therapy without acupressure. Acupressure therapy and bay leaf extract (*Syzygium polyanthum*) were administered for 12 days with an acupressure duration of 1 point 5 minutes and bay leaf extract at a dose of 1 gram per day.

Pain measurement using the instrument Numeric Rating Scale (NRS) with scale 0 – 10. Numeric Rating Scale (NRS) scale that is 0 = no pain, 1-3 = mild pain, 6-7 = moderate pain, 8-9 = severe pain controlled and 10 = severe uncontrolled pain. The pain was measured for respondents who experienced arthritis gout was carried out before (pre-test day 1) and after the therapeutic action (post-test day 12).

This study's population is all patients who have gouty arthritis in the work scope of Indrajaya Public Health Center, Pidie Regency. Determination of the minimum sample size

using technique probability sampling with method simple random sampling, we involved 30 respondents. The samples were divided into three groups, including the intervention group received acupressure therapy and bay leaf extract. The first control group received the therapy acupressure without bay leaf extract. Whereas the second control group therapy bay leaf extract without acupressure).

In this study, researchers collected data using observation, identification, interview, and filling out observation sheets. The collected data were analyzed through the IBM SPSS version 24.0 program and continued with different tests, namely the parametric test (Paired t-test and One Way ANOVA).

## RESULTS

Table 4.1 Frequency distribution of respondents from age, gender, profession, and education based on demographic data

Characteristics	Intervention (n=10)		Control 1 (n=10)		Control 2 (n=10)		P
	N	%	N	%	N	%	
<b>Age</b>							0.657
Late teens	-	-	-	-	1	10 %	*
Early adulthood	1	10 %	-	-	1	10 %	
Late adulthood	2	20 %	3	30 %	-	-	
Early elderly	3	30 %	2	20 %	3	30 %	
Late elderly	3	30 %	5	50 %	4	40 %	
Senior	1	10 %	-	-	1	10 %	
<b>Gender</b>	4	40 %	1	10 %	4	40 %	0.000
Male	6	60 %	9	90 %	6	60 %	*
Female	4	40 %	1	10 %	4	40 %	
<b>Profession</b>							0.034
Housewife	5	50 %	8	80 %	3	30 %	*
College student	-	-	-	-	1	10 %	
entrepreneur	3	30 %	1	10 %	-	-	
Civil servants	1	10 %	-	-	-	-	
Cook interpreter	-	-	-	-	1	10 %	
Farmers	1	10 %	-	-	2	20 %	
Trader	-	-	1	10 %	2	20 %	
Does not work	-	-	-	-	1	10%	
<b>Education</b>							0.916
Not school	-	-	2	20 %	-	-	
Elementary school	2	20 %	4	40 %	3	30 %	
Middle School	4	40 %	2	20 %	2	20 %	
High school	2	20 %	2	20 %	5	50 %	
College	2	20 %	-	-	-	-	
<b>Total</b>	10	100	10	100	10	100	

*\*Homogeneity Test*

Based on the table above, we get data that age, gender, profession, and education in the intervention and control groups have the same significant p-value >0.05 means the same or homogeneous.

Table 4.2 Differences in mean pain before and after treatment in the intervention, control one and control two groups

Group	Pre-test Mean ± SD	Post-test Mean ± SD	Delta	P-value
Intervention	6.5±1.08	1.8±1.033	4.7	0.000*
Control 1	5.7±1.160	2.6±0.84	3.10	0.000*
Control 2	6.0±1.33	3.0±1.41	3.00	0.000*

\*Paired t-test

The table showed the mean difference of pain reduction before and after receiving treatment among intervention and control groups. The p-value was 0.000 (<0.05). However, the difference in pain reduction in the intervention group was 4.7 greater than that in the control group 1 3.10 and control group 2 3.00.

Table 4.3 Analysis of the difference in mean pain between the intervention group, control group 1, and control group 2

Variables	Measurement	Group	Mean ± SD	P*
Pain	Delta	Intervention	4.7±1.05	0.001*
		Control 1	3.1±0.99	
		Control 2	3.0±1.05	

\*One Way ANOVA test

The table above shows a significant difference in pain reduction between the intervention group, control group 1, and control group 2 with a p-value of 0.001 (<0.05). The conclusion is that acupressure and bay leaf extract (*Syzygium polyanthum*) effective in reducing pain.

Table 4.4 Analysis of effectiveness acupressure and bay leaf extract (*Syzygium polyanthum*) between the intervention group, control group 1, and control group 2

Dependent Variable	Independent Variable		Sig (p-value)	95% CI	
				lower	upper
Pain	Intervention	Control 1	0.006*	4.02	5.37
		Control 2	0.003*		
	Control 1	Intervention	0.006*	2.42	3.77
		Control 2	1.000*		
	Control 2	Intervention	0.003*	2.32	3.67
		Control 1	1.000*		

\*Post Hoc Bonferroni Test

Based on the table above shows the results for the effectiveness of pain by group, the ones that have significance are the intervention group with control 1 (p = 0.006) and the intervention group with control group 2 (p = 0.003). The administration of acupressure and bay leaf extract in the intervention group effectively reduced pain from 4.02-5.37 in patients with arthritis gout. Acupressure in control group 1 effectively reduced pain from 2.42-3.77 in patients with arthritis gout. The administration of bay leaf extract to the control group 2 effectively reduced pain by 2.32-3.67 in patients with arthritis gout.

## DISCUSSION

Based on the one way ANOVA test result was  $p = 0.001$  so that the results concluded that acupuncture and bay leaf extract was effective in reducing pain in patients with arthritis gout. The most influential group in reducing pain in arthritis gout patients was the intervention group, which was given acupuncture and bay leaf extract treatment.

In addition to statistical calculations, clinical interpretation is carried out based on the value of the calculated effect size Cohen's with the criteria 0-0.20 (very weak), 0.21-0.40 (weak), 0.41-0.60 (moderate), 0.6 -0.8 (strong),  $0.8 \geq 1$  (very strong). In this study, the pain variable had an extreme value effect size very strong of 0.96, which means that acupuncture and bay leaf extract effectively reduced pain.

Other studies also say that compress therapy uses ginger decoction combined with acupuncture at the ki 3 points to reduce pain in arthritis gouty patients with  $p = 0.013$ . This study consisted of two groups, such as the experimental group, ginger and acupuncture compress for 30 minutes. The control group was provided ginger and acupuncture compresses for 15 minutes with a value effect size strong of 0.79. Emphasis on the acupuncture point ki three due to this point can have a local effect in reducing pain around the area of pressure. It can stimulate receptors to activate the central nervous system's pain modulation system, which produces endorphin hormones to suppress pain transmission and perception to reduce pain (31-32).

Bay leaf extract is useful in dealing with pain with analgesic content, which is expected to reduce pain. The strength of making the extract so that it has a longer shelf-life and practicality in consuming, previously the use of bay leaves was often studied using boiled water of bay leaves. A previous study on the effect of providing the boiled water from bay leaves on pain with a significance value of  $p=0.000$ . The results explained that bay leaves by the eugenol compound in bay leaves, as an analgesic, eugenol compounds can inhibit prostaglandins biosynthesis and an anti-inflammatory of phenol compounds that inhibit leukocyte chemotaxis (33).

Bay leaves are familiar to the public because they are used to add ingredients to cooking, and they often use bay leaf boiled water believed to have health properties. Processing bay leaves into bay leaf extract by maceration process is then encapsulated according to the predetermined dose and given for 12 days to provide pain relief in gouty arthritis clients in manner herbs. This bay leaf extract works to reduce pain with the content contained in bay leaves.

Complementary therapy is a treatment option that has a significant presence and influence in health treatments. More surprising, according to the research results, doctors obtained a percentage of 82% compared to 58% of patients in choosing to undergo CAM (treatment complementary and alternative medicine). Various reasons obtained in choosing CAM are dissatisfaction in conventional treatment, because of the philosophical and spiritual orientation, doctors and patients have tried CAM therapy for skin diseases, arthritis, asthma. As a result, they experience a relatively large level of satisfaction, and the majority have not experienced side effects from CAM.(34)

Complementary nursing interventions such as acupuncture and bay leaf extract can reduce pain in clients with gouty arthritis. The most significantly influential group was the group that was given acupuncture and bay leaf extract at the same time. This research was conducted for 12 days with a total duration of acupuncture in a day for 10 minutes and 1 gram of bay leaf extract. Whereas in previous studies, acupuncture was only given for two days and seven days. In comparison, the bay leaf extract was provided to humans in previous studies presented 1 gram per day for seven days to reduce cholesterol levels. By providing treatment at the same time between acupuncture and bay leaf extract, it is hoped that the body's mechanism of action in pain will increase, thereby accelerating the reduction of pain in clients suffering from arthritis gout.

This therapy can be chosen as one of the complementary nursing therapies for arthritis gouty clients when the bay leaf extract is administered. Acupressure at the point the comfort kolcaba theory can be applied by providing comfort when given actions such as using an imaginary guide and offering a comfortable atmosphere until the client relaxes to provide maximum complementary nursing interventions.

It is hoped that by applying the theory of kolcoba during the acupressure action and bay leaf extract, the pain intensity can be reduced quickly and obtain maximum results. Because the comfort felt by patients is the main thing in providing complementary nursing interventions.

## CONCLUSION

Based on data processing and analysis of complementary nursing interventions of acupressure and bay leaf extract (*Syzygium polyanthum*). It concluded that the most influential group in reducing pain in arthritis gout patients was the intervention group that was given acupressure therapy and bay leaf extract with a value p-value 0.001 (<0.05).

A study showed that the intervention group who received both acupressure and bay leaf extract effectively reduced pain than control group 1 and control group 2.

This was due to the mechanical process of the body after receiving the acupressure. The delivery of acupressure for 12 days of treatment with 20 minutes per day could stimulate the endorphin hormone. Thereby, the pain was significantly reduced. Thus, complementary nursing intervention measures in this study, such as acupressure, can be an alternative in reducing pain as a complementary nursing intervention in providing health services for arthritis gout.

## REFERENCES

- (1) Wang Y, Dong L, Liu P, Chen Y, Jia S, Wang Y. A Randomized Controlled Trial Of Chuanhutongfeng Mixture For The Treatment Of Chronic Gouty Arthritis By Regulating Mirnas. *Evidence-Based Complementary And Alternative Medicine: Ecam*. 2019;2019:5917269-.
- (2) Kuo C-F, Grainge MJ, Zhang W, Doherty M. Global Epidemiology Of Gout: Prevalence, Incidence, and Risk Factors. *Nature Reviews Rheumatology*. 2015;11(11):649.
- (3) Penelitian B, Kesehatan P. Hasil Utama Riskesdas 2018. Jakarta: Kementerian Kesehatan Republik Indonesia. 2018.
- (4) Endi Ridwan Ms, Aprildah Sapardin. Riset Kesehatan Dasar 2013: Lembaga Penerbitan Badan Litbangkes; 2013.
- (5) Chandratre P, Mallen C, Richardson J, Muller S, Hider S, Rome K, Et Al. Health-Related Quality Of Life In Gout In Primary Care: Baseline Findings From A Cohort Study. *Seminars In Arthritis And Rheumatism*. 2018;48(1):61-9.
- (6) Hardikasari Da. Gambaran Tingkat Pengetahuan Pasien Lansia Yang Arthritis Rematoid Dan Gout Dalam Mengatasi Nyeri Sendi (Studi Deskriptif Di Puskesmas Adan “ Adan Kabupaten Kediri). *Jurnal Akp*. 2017(Vol 8, No 2 (2017): Jurnal Akp - Desember 2017).
- (7) Lingga L. Bebas Penyakit Asam Urat Tanpa Obat: Agromedia; 2012.
- (8) Rakhman A, Purnawan I, Purwadi Ar. Pengaruh Terapi Akupressure Terhadap Kadar Asam Urat Darah Pada Lansia. *Jurnal Skolastik Keperawatan*. 2015;1(2):62-8
- (9) Pakpahan Tl. Manfaat Jahe Merah (*Zingiber Officinale Roscoe*) Terhadap Kadar Asam Urat. *Jurnal Agromedicine*. 2015;2(4):530-5.
- (10) Onibala F, Bidjuni H, Seran R. Hubungan Antara Nyeri Gout Arthritis Dengan Kemandirian Lansia Di Puskesmas Towuntu Timur Kecamatan Pasan Kabupaten

- Minahasa Tenggara. *Jurnal Keperawatan*. 2016(Vol 4, No 1 (2016): E-Journal Keperawatan).
- (11) Yudiyanta Nk, Novitasari Rw. *Assessment Nyeri*. *Jurnal Cdk*. 2015;226.
  - (12) Aspiani Ry. *Buku Ajar Asuhan Keperawatan Gerontik*. Jakarta: Trans Info Media. 2014.
  - (13) Purwanti S, Prastiwi S, Rosdiana Y. Hubungan Pelayanan Perawat Dengan Kepuasan Pasien Rawat Jalan Di Puskesmas Wisata Dau Malang. *Nursing News: Jurnal Ilmiah Keperawatan*. 2017;2(2).
  - (14) Kesehatan K. Peraturan Menteri Kesehatan Republik Indonesia Nomor 26 Tahun 2019. *Berita Negara Republik Indonesia*. 2019.
  - (15) Mehta P, Dhapte V, Kadam S, Dhapte V. Contemporary Acupressure Therapy: Adroit Cure For Painless Recovery Of Therapeutic Ailments. *Journal Of Traditional And Complementary Medicine*. 2017;7(2):251-63.
  - (16) Schlesinger N. Chapter 13 - Nonpharmacologic Treatment Of Gout. In: Schlesinger N, Lipsky Pe, Editors. *Gout*: Elsevier; 2019. P. 155-61.
  - (17) Rahmah Laksmi Ambardini Fa. Tingkat Keberhasilan Masase Frirage Dan Akupresurdalam Mengurangi Nyeri Dan Meningkatkan Rom(Range Of Motion) Pada Pasien Cedera Bahu Di Kliniksasana Husada Yogyakarta. *Medikora*. 2015(Vol. Xiv No. 1 April 2015).
  - (18) Narimani M, Ansari Jaber A, Negahban Bonabi T, Sadeghi T. Effect Of Acupressure On Pain Severity In Patients Undergoing Coronary Artery Graft: A Randomized Controlled Trial. *Anesthesiology And Pain Medicine*. 2018;8(5):E82920-E.
  - (19) Sumarni S, Yasin Z. Pengaruh Intervensi Akupresur Dalam Proses Distraksi Pasien Intranatal Untuk Menurunkan Nyeri Persalinan Di Wilayah Kerja Polindes Sriwahyuni Saronggi Sumenep. *Wiraraja Medika*. 2016;6(1):35-41.
  - (20) Kostania G, Kuswati K, Fitriyani A. Akupressure Pada Titik Hegu Untuk Mengatasi Nyeri Menstruasi. *Jurnal Kebidanan Indonesia: Journal Of Indonesia Midwifery*. 2019;10(2):50-9.
  - (21) Utomo Y, Adi Gs, Umarianti T. Pengaruh Kombinasi Terapi Akupresur Dan Pemberian Jus Sirsak Terhadap Penurunan Kadar Asam Urat Pada Penderita Gout Arthritis. *Jurnal Ilmiah Maternal*. 2018;2(4).
  - (22) Harismah K. Pemanfaatan Daun Salam (*Eugenia Polyantha*) Sebagai Obat Herbal Dan Rempah Penyedap Makanan. *Warta Lpm*. 2017;19(2):110-8.
  - (23) Mulyani H, Widyastuti Sh, Ekowati Vi. Tumbuhan Herbal Sebagai Jamu Pengobatan Tradisional Terhadap Penyakit Dalam Serat Primbon Jampi Jawi Jilid I. *Jurnal Penelitian Humaniora Uny*. 2016;21(2).
  - (24) Adyani K, Anwar Ad, Rohmawaty E. Peningkatan Kadar Hemoglobin Dengan Pemberian Ekstrak Daun Salam (*Syzygium Polyanthum* (Wight) Walp) Pada Tikus Model Anemia Defisiensi Besi. *Majalah Kedokteran Bandung*. 2018;50(3):167-72.
  - (25) Jumaat Sr, Tajuddin Sn, Sudmoon R, Chaveerach A, Abdullah Uh, Mohamed R. Chemical Constituents And Toxicity Screening Of Three Aromatic Plant Species From Peninsular Malaysia. *Bioresources*. 2017;12(3):5878-95.
  - (26) Andriani A, Chaidir R. Pengaruh Pemberian Air Rebusan Daun Salam (*Syzygium Polyanthum*) Terhadap Penurunan Kadar Asam Urat. *Jurnal Ipteks Terapan*. 2016;10(2):112-9.
  - (27) Yensanidar Y, Marlinda M. Efektivitas Pemberian Ekstrak Daun Salam (*Eugenia Polianta*) Dibandingkan Obat Statin Dalam Penurunan Kadar Kolesterol Total Pada Penderita Hiperkolesterol Diwilayah Kerja Uptd Puskesmas Kerinci Kanan. *Jurnal Kesehatan Perintis (Perintis's Health Journal)*. 2018;5(1):1-8.
  - (28) Kuswara R. Uji Toksisitas Akut Infusa Daun Salam (*Syzygium Polyanthum* (Wight) Walp.) Terhadap Gambaran Histopatologi Hepar Tikus Galur Wistar. *Jurnal Mahasiswa Pspd Fk Universitas Tanjungpura*. 2015;3(1).

- (29) Rivai H, Heriadi A, Fadhilah H. Pembuatan Dan Karakterisasi Ekstrak Kering Daun Salam (*Syzigium Polyanthum* (Wight) Walp.). *Jurnal Farmasi Higea*. 2017;7(1):54-62.
- (30) Selina As, Tandililing E, Mursyid S. Remediasi Miskonsepsi Materi Pemantulan Cahaya Menggunakan Simulasi Flash Pada Siswa Smp. *Jurnal Pendidikan Dan Pembelajaran*.5(2).
- (31) Pertiwi Eme, Awaludin S, Sumeru A. The Effect Of Combination Therapy Of A Warm Ginger Stew Compress And Ki. 3 Point Acupressure On The Pain Level Of Gout Arthritis Patients In Indonesia. *Jurnal Ners*. 2019;14(2):151-4.
- (32) 104. Majid Ya, Rini Ps. Terapi Akupresur Memberikan Rasa Tenang Dan Nyaman Serta Mampu Menurunkan Tekanan Darah Lansia. *Jurnal Aisyah: Jurnal Ilmu Kesehatan*. 2016;1(1):79-86.
- (33) Cumayunaro A. Rebusan Daun Salam Untuk Penurunan Kadar Asam Urat Dan Intensitas Nyeri Arthritis Gout Di Puskesmas Andalas Padang. *Menara Ilmu*. 2017;11(75).
- (34) Solanki R. Complementary And Alternative Medicine: Hidden Presence Among Doctors And Patients, An Explorative Study. *Medicine*. 2016;15:30.