

**THE EFFECT OF TWICE A DAY INTAKE OF *PEPEROMIA*  
*PELLUCIDA* DECOCTION IN THE PAIN, STIFFNESS  
AND DISABILITY SCORES USING WOMAC  
ARTHRITIS INDEX ON PATIENTS  
WITH KNEE JOINT  
RHEUMATISM**

**A RESEARCH PAPER PRESENTED TO THE FACULTY  
OF THE ATENEO DE ZAMBOANGA UNIVERSITY  
SCHOOL OF MEDICINE**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT  
FOR THE DEGREE OF DOCTOR OF MEDICINE**

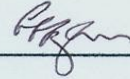
**BY:**

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**2009**

## APPROVAL SHEET

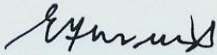
This research is entitled *THE EFFECT OF TWICE A DAY INTAKE OF PEPEROMIA PELLUCIDA DECOCTION IN THE PAIN, STIFFNESS AND DISABILITY SCORES USING WOMAC ARTHRITIS INDEX ON PATIENTS WITH KNEE JOINT RHEUMATISM* prepared and submitted by **Ferdinand I. Uy**, in partial fulfillment of the requirements for the degree of **Doctor of Medicine**, is hereby accepted



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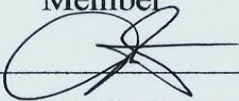
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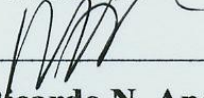
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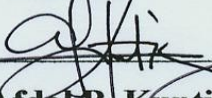
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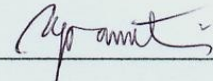
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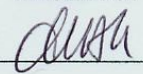
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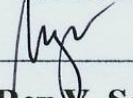
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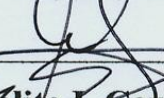
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## ABSTRACT

*This study aims to determine the effect of twice a day intake of Peperomia Pellucida decoction in the pain, stiffness and disability scores using the WOMAC arthritis index on patients with knee joint rheumatism. The research utilizes a crossover pre and post research design. Convenience sampling was done on the selection of the respondents. Ibuprofen was used as a model treatment to base the effectivity of the decoction. The study has two interventional phases the decoction phase and the ibuprofen phase which lasted for a month in each phase. Result showed that both the twice a day intake of the peperomia pellucida decoction and the ibuprofen treatment taken as needed for pain, indeed has significantly lowered the mean scores on the pain, stiffness, and disability on the WOMAC arthritis index among the respondents. Recommendations for further studies involve devising a strategy to be able to compare the effect of peperomia pellucida decoction and the standard therapy treatment for joint rheumatism, this should involve a proper randomization sampling of the respondents, proper blinding methods, a placebo, and a non-pharmacologic methods should be included and tested in that study.*

# CHAPTER I

## INTRODUCTION

### **Background of the Study**

Joint rheumatism is a condition of various etiologies; it may be localized, affecting only one joint complex or a multiple affection of joints, muscles, tendons and/or ligaments in one extremity, both, or all of the extremities not excluding the joints of the vertebral column. People being afflicted by this condition almost always suffers from pain and stiffness of the affected body part, it may be mild, moderate or severe, but either way this will bring about great impact to the person's decline in their performance on the activities of daily living, therefore greatly affecting their sense of wellbeing and quality of life.

The therapeutic approach for joint rheumatism is always subtle, most physicians manages patients with this condition by prescribing Nonsteroidal anti-inflammatory drugs (NSAID) to alleviate pain and swelling. People especially those living in areas where they don't have access to a physicians or any health care worker tends to resort into taking in a non-scientific medicinal regiments such as herbal plants made into a decoction or poultice to be applied in the affected region of the body.

Under the Republic Act No. 8423 otherwise known as the "Traditional and Alternative Medicine Act (TAMA) of 1997", the DOH stated "To promote and advocate the use of traditional, alternative, preventive, and curative health care modalities that have been proven safe, effective, cost effective and consistent with the government standards on medical practice." The Department of Health (DOH) and Philippine Institute

of Traditional and Alternative Health Care (PITAHC) listed 10 herbal medicines, one of which is Ulasimang Bato (*Peperomia Pellucida*) for the treatment of arthritis and gout.

During the community diagnoses conducted by the researcher's group in barangay Veterans Village dated April 2006, it was found out that the top 2 lifestyle disease in the community is arthritis/joint rheumatism, but majority of the people just ignored the condition, but it does cause them problems, since during the recurrence pain they become incapacitated to work.

In the hope of finding a treatment/therapeutic remedies for joint rheumatism, which is cost-efficient, effective, and safe conceived the idea of doing an interventional study to determine the effect of *peperomia pellucida* decoction in the pain, stiffness and disability scores of patients with joint rheumatism specifically the knee joint.

### **Statement of the Problem**

What is the effect of twice a day intake of *peperomia pellucida* decoction in the pain, stiffness and disability scores using WOMAC arthritis index on patients with knee joint rheumatism?

### **General Objective**

To determine the effect of twice a day *peperomia pellucida* decoction intake in the pain, stiffness and disability scores using WOMAC arthritis index on patients with knee joint rheumatism.

## **Specific Objectives**

1. To determine if there is a change in the pain, stiffness, and disability scores among the respondents before and after the intervention using twice a day peperomia pellucida decoction.
2. To determine if there is a change in the pain, stiffness, and disability scores among the respondents before and after the intervention using Ibuprofen.

## **Null Hypothesis**

Twice a day peperomia pellucida decoction intake has no effect in the pain, stiffness and disability scores using WOMAC arthritis index on patients with knee joint rheumatism.

## **Alternative Hypothesis**

Twice a day peperomia pellucida decoction intake has an effect in the pain, stiffness and disability score using WOMAC arthritis index on patients with knee joint rheumatism.

## **Significance of the Study**

If twice a day peperomia pellucida decoction is proven effective in decreasing the pain, stiffness and disability scores of patients, this will mean that the decoction is effective and can be recommended as a herbal regiment to address the pains and stiffness on patients with knee joint rheumatism.

Another advantage on using the herbal decoction is that, there are no known side effects to the treatment regiment, although some claimed this herb can cause hypersensitivity or asthma like manifestation, these was not proven by scientific studies; compared to NSAID and other pain medications, which should not be taken as maintenance medicine, since majority of NSAID causes gastritis, peptic ulcer disease and abnormal bleeding tendencies to name a few.

This study will also utilize Ibuprofen, since this drug is one of the standards in the treatment of knee joint rheumatism, this drug will serve as a model measure to the effectiveness of the peperomia pellucida decoction. The WOMAC arthritis index will be used to rate the scores of all the respondents in all the phases of the study. All the scores will be analyzed and illustrated to arrive to a conclusion and recommendation at the end of the study.

### **Scope and Delimitation**

This study is limited on determining the effect of twice a day intake of peperomia pellucida decoction in the pain, stiffness and disability scores of knee joint rheumatism. The detailed chemical composition of the peperomia pellucida herb and its pharmacologic action is beyond the scope of this text.

### **Definition of Terms**

Knee Joint Rheumatism – is a persistently painful condition of the musculoskeletal tissues of the knee joint.

## Conceptual Framework

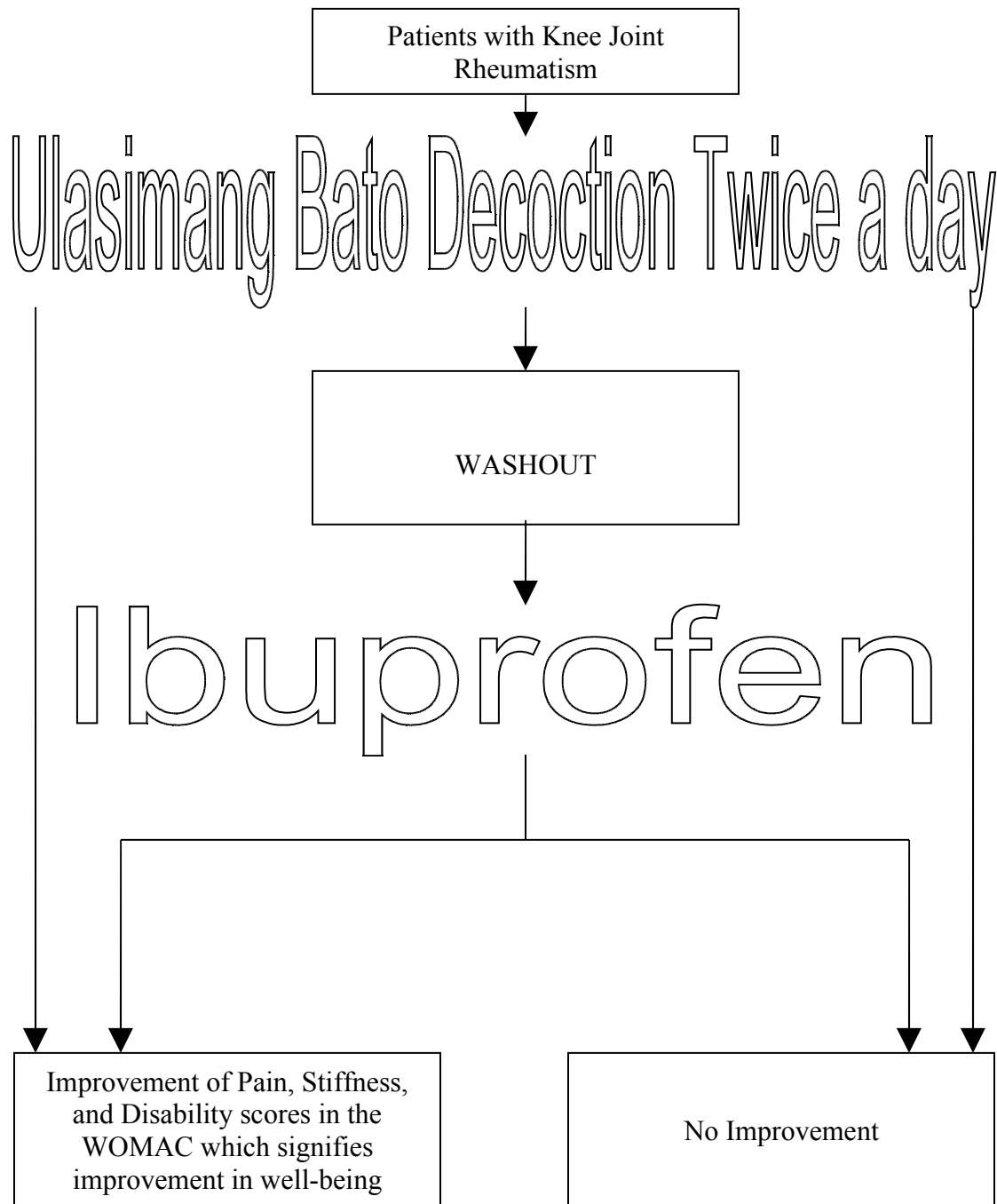


Figure 1 Conceptual Framework

## **CHAPTER II**

### **REVIEW OF RELATED LITERATURE**

The Ulasimang Bato (*Peperomia Pellucida*) herb belongs to the family Piperaceae, comprising of about 5 genera and 1,400 species. The genus *Peperomia* represents nearly half of the Piperaceae. *Peperomia pellucida* herb can be commonly found in many South American countries, and in Asia. The plant grows 15 to 45 cm, its shiny light-green leaves are succulent, well spaced, and heart shaped. This herb thrives in loose, humid soils under the shade of trees, especially during rainy seasons, (dos Santos et al, 2001).

The *Peperomia pellucida* has a rich history of medicinal use. Based on ethnomedicinal data in Bolivia from Alteños Indians, it was documented that they used to crush this whole plant, mix it with water, heat it, and then orally taken to stop hemorrhage. The same reference documents a root decoction for the treatment of fever, and the mashed leaves to be used as dressing for wounds, (Muñoz, 2000).

*Peperomia pellucida* has been used for treating multitude of disease like abdominal pain, gout, headache, renal disorders, acne, and abscess. It has been used in salads or as cooked vegetable to help in the treatment of rheumatic joint pain, (Khan, 2002).

There are numerous chemical investigations, primarily focusing on the essential oils of the plant, one study identified 71 compounds from the essential oils of piperaceae species with Sesquiterpenes was found to be the major constituent. Cartotol was the major hydroxylated sesquiterpene in the chemical analysis of *P. pellucida*. Flavonoids,

phytosterols, arylpropanoids, substituted styrenes, and a dimeric ArC<sub>2</sub> compound or pellucidin A has been isolated. These compounds have a documented anti-inflammatory, chemotherapeutic, and analgesic properties found in *P. pellucida* in crude form, (dos Santos et al 2001).

*Peperomia pellucida* is one of the 10 recommended herbal medicines promoted by the DOH. This herb particularly used to treat gout and arthritic conditions, this is also being advocated by the Philippine medicinal plant website, (DOH).

Ibuprofen is a non-steroidal anti-inflammatory drug (NSAID) originally marketed as Brufen, has various other tradenames, most notably Nurofen, Advil and Motrin. It is used often in the relief of arthritic symptoms, often served as analgesic especially where there is an inflammatory component, (<http://en.wikipedia.org/wiki/Ibuprofen>).

## **CHAPTER III**

### **METHODOLOGY**

#### **Research Design**

This study used the crossover pre and post research design. The study has three phases wherein the first phase is comprised of giving a twice a day peperomia pellucida decoction to the respondents for a month, afterwards followed by a washout phase for one month, then the third phase comprised of the giving of ibuprofen to the respondents for one month.

#### **Respondent Selection**

Inclusion Criteria:

- Adult men and women, 50 years of age and above.
- Patients who have a positive signs and symptoms of knee joint rheumatism during history and physical exam.
- Respondents should not have other co-morbidities like hypertension stage 2 JNC7 or renal diseases by history.
- Respondents should be able to understand and fully accomplish the WOMAC questionnaire.

Drop-out Criteria:

- Respondents who are not able to complete or tolerate the course of the study.

## **Sampling Strategy**

The study utilized a convenience sampling method, wherein a house to house survey was done by the researcher with the research assistants in search for people with knee joint rheumatism, living in the designated areas of the study. Those patients who are able to meet the inclusion criteria are invited to be part of the study.

## Flow of Activities

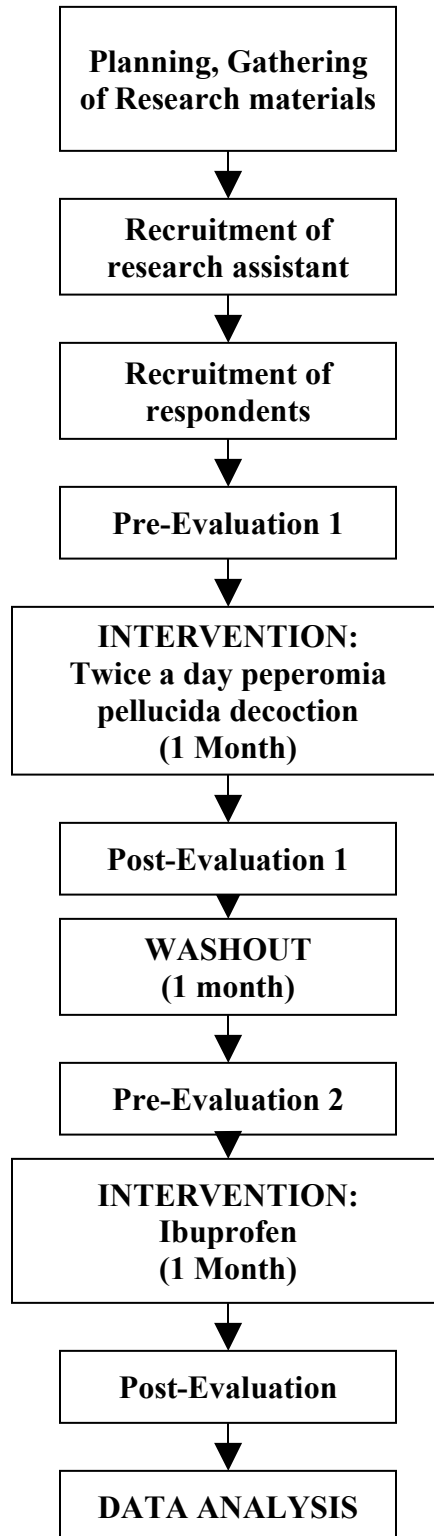


Figure 2 Flow of Activities

## **Planning, Gathering of research materials**

In this stage the researcher reviewed the prevalence and incidence of patients with knee joint rheumatism.

The questionnaire utilized for the study is the WOMAC arthritis index by Dr. Nicholas Bellamy. The Index is self-administered and assesses three categories comprising of pain, stiffness, and disability using a battery of 24 questions.

## **Recruitment of Research Assistant**

As research assistants their purpose is to:

1. House to house survey for case-finding and contract signing.
2. Monitoring of the respondents.
3. Distribute and to help facilitate the completion of the questionnaire from each respondents.
4. Decoction preparation and distribution.
5. Ibuprofen distribution.

## **Recruitment of Respondents**

The researcher, with the aid of the research assistant went on a house to house survey to identify respondents who meet the inclusion criteria. Those candidates who meet the inclusion criteria are invited to join the study; followed by the signing of the written consent (see Appendix A), that they will be officially enrolled in the study.

### **Pre-evaluation testing 1 (Before the Decoction Phase)**

All respondents that are recruited for the study had successfully answered the WOMAC arthritis index questionnaire for baseline purposes. The pre-testing lasted for 1 week.

### **Intervention Using Twice-a-day Peperomia Pellucida decoction**

The peperomia pellucida decoction is prepared by the researcher with the aid of the research assistant, and had been distributed to all the respondents in this phase of the study. The respondent will take 1 cup (~237ml) of peperomia pellucida decoction 2 times a day (1 cup in the morning, and 1 cup in the evening), everyday for one month. Basis for giving 2 cups of the decoction a day was taken from the recommended preparation in the Philippine medicinal plants website which also conforms to the DOH recommendation. For the preparation of the peperomia pellucida decoction please refer to appendix B.

### **Post-evaluation testing 1 (After the Decoction Phase)**

All respondents are tested using WOMAC arthritis index after the decoction phase. This lasted for 1 week.

### **Washout period**

This phase is where all the respondents are strictly requested to stop taking the peperomia pellucida decoction. Washout period lasted for 1 month.

## **Pre-evaluation testing 2 (Before the Ibuprofen Phase)**

After the washout phase respondents had again been tested using the WOMAC arthritis index. This lasted for 1 week.

## **Intervention using Ibuprofen**

The researcher and the research assistants had distributed 50 pieces of Ibuprofen 400mg pills to each respondent. The respondents are advised to take 1 ibuprofen every 6 to 8 hours, and not exceeding 3 tablets a day, as needed for pain. In this phase of the study each respondent doesn't necessarily have to take ibuprofen everyday. The interventional phase lasted for 1 month.

## **Post-evaluation testing 2 (After the Ibuprofen Phase)**

After the ibuprofen phase each respondents are tested with the WOMAC arthritis index, this lasted for 1 week.

## **Research Instruments**

The WOMAC Arthritis Index that is being used by the researcher with the consent of the author since this is a proprietary questionnaire developed by Dr. Nicholas Bellamy for the purpose of osteoarthritis scoring, which can also be utilized for general rheumatic/arthritis conditions. The study computes for the WOMAC mean scores of all the respondents before and after each treatment intervention, the mean scores are compared using the T-test; this will determine the effect before and after each treatment intervention. The study also utilizes the wilcoxon non-parametric signed rank test to

determine which among the respondents got better, got worst, or had no changes before and after the intervention using either the decoction or the ibuprofen.

WOMAC Arthritis Index has three major categories for scoring, which includes pain, stiffness, and disability scores, these comprises of five, two and seventeen questions respectively. Respondents answering the questionnaires are requested to place an “x” mark along the 10cm line provided for each questions, scores are interpreted by measuring the placement of the “x” mark along the line using a ruler, the distance in millimeters of the “x” mark from left corner of the line is interpreted as the score for that particular question, the possible respond for each question ranges from 0 – 100. All the response in each question on certain category are summated to get the total score of that category. The score for each category like the pain, stiffness and the disability scores ranges from 0-500, 0-200 and 0-1700 respectively.

## CHAPTER IV

### RESULTS AND INTERPRETATIONS

The study involved 32 respondents with lower extremity rheumatism, and they comprise of 22 females (69%) and 10 males (31%). The mean age of the respondents was 59.91 (Range 51 – 78). Seventeen (53%) of the respondents are from barangay Veterans Village, and fifteen (47%) are from barangay Don Andres. Twenty nine of the respondents complained about problems in their knee/s alone (91%) and just three for knee/s with ankle/s problem (9%).

Table 1a WOMAC Mean scores before and after the Decoction phase

Peperomia Pellucida Decoction	(Before)	(After)
<b>Pain</b> (0 – 500)	<b>386.1250</b> (209 – 491)	<b>149.2813</b> (11 – 455)
<b>Stiffness</b> (0 – 200)	<b>119.0938</b> (6 – 196)	<b>51.8438</b> (4 – 188)
<b>Disability</b> (0 – 1700)	<b>1162.4375</b> (545 - 1662)	<b>392.8438</b> (37 – 1583)

Table 1a shows a table of the mean WOMAC scores as well as the minimum and maximum scores enclosed in the parenthesis, of the 32 respondents before and after the twice a day decoction phase for 1 month. It is noted that there was a decrease in the pain, stiffness and disability between the pre and post decoction phase.

Table 1b Comparative Analysis before and after Decoction Phase

Peperomia Pellucida Decoction (Before and After)	t	df	H <sup>2</sup>	p value
Pain	13.198	31	84.89%	0.000*
Stiffness	5.417	31	48.63%	0.000*
Disability	11.686	31	81.50%	0.000*

\* - indicate that the p value is significant

Table 1b however the change in the mean scores on all the categories of the WOMAC arthritis index before and after the decoction interventional phase is significant and not only due to chance ( $p = < 0.05$ ). The eta-squared ( $\eta^2$ ) percentage indicates the variability of the change in the mean scores is due to the intervention. The lower percentage in the stiffness scores maybe due to the fact that the decoction is not an effective measure to counteract with stiffness, although the changes in the mean stiffness results still reported as significant.

Table 2a WOMAC Mean scores before and after the Ibuprofen phase

Ibuprofen	(Before)	(After)
<b>Pain</b> (0 – 500)	<b>304.0625</b> (153 – 489)	<b>47.5313</b> (11 – 251)
<b>Stiffness</b> (0 – 200)	<b>95.2813</b> (8 – 194)	<b>32.3438</b> (6 – 137)
<b>Disability</b> (0 – 1700)	<b>972.4063</b> (500 - 1657)	<b>191.3125</b> (42 - 629)

Table 2a shows a table of the mean WOMAC scores as well as the minimum and maximum scores enclosed in the parenthesis, of the 32 respondents before and after the

Ibuprofen phase for 1 month. It is also observed in this table that the scores for all the three category index dropped precipitously.

Table 2b Comparative Analysis before and after Ibuprofen Phase

Ibuprofen (Before and After)	t	df	$\eta^2$	p value
Pain	16.824	31	90.13%	0.000*
Stiffness	8.781	31	71.32%	0.000*
Disability	17.105	31	90.42%	0.000*

\* - indicate that the p value is significant

Table 2b moreover showed that significant change in the mean scores on all the categories of the WOMAC arthritis index before and after the ibuprofen interventional phase is noted and not only due to chance ( $p = < 0.05$ ). The eta-squared ( $\eta^2$ ) of the ibuprofen phase reported a 70 to 90 percent variability of the changes in the mean scores is due to the intervention.

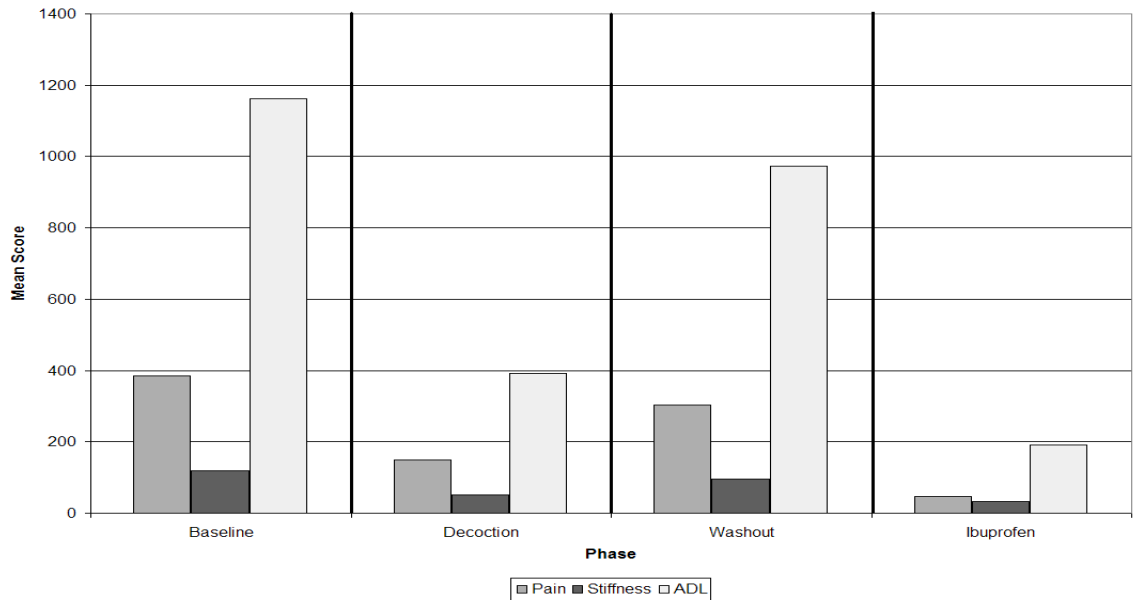


Figure 3 Graph of the Mean Scores

Figure 3 shows the bar graph of the mean scores of all 32 respondents throughout the study. The baseline phase is where all the respondents are being tested but still without any treatment, after the decoction phase the mean scores significantly dropped ( $p < 0.05$ ) this pertains that the intervention is effective in decreasing the pain, stiffness, and disability scores. In the washout phase the decoction has been ceased for at least a month, this showed restitution of the pain, stiffness and disability scores back to baseline scores, but notice the scores in the washout phase didn't return exactly like the baseline. After the ibuprofen the mean scores again drop significantly ( $p < 0.05$ ), yielding lower mean score on the pain, stiffness and disability as compared to the washout phase.

Table 3a Outcome of Respondents after the decoction phase

Decoction	Regressed	Improved	No Change
Pain	0	32	0
Stiffness	6	26	0
Disability	0	32	0

Table 3b Outcome of Respondents after the ibuprofen phase

Ibuprofen	Regressed	Improved	No Change
Pain	0	32	0
Stiffness	2	30	0
Disability	0	32	0

Table 3a and Table 3b illustrate the comparison of the different scores during the different phases of the study, the researcher utilized the Wilcoxon signed ranked test. The pain scores was always lower after every interventional phase as compared to the average of both the pre-intervention 1 and pre-intervention 2 phases. In the stiffness scores, 6 (19%) out of 32 respondents claimed that their stiffness scores worsen after the decoction phase, and 2 (6%) out of 32 respondents claimed that their stiffness scores worsen after the Ibuprofen phase. In the Disability scores all respondents claimed to have a decreased in scores after the twice a day decoction as well as the ibuprofen.

## CHAPTER V

### DISCUSSION

To address the need of the community people to be able to utilize alternative herbal medicine, studies should be made and designed to promote its benefits and welfare. The process of determining that the herbal decoction is effective in decreasing the patient's pain, stiffness and disability that conforms to the drugs used as the treatment standard of treatment is the major objective of the study.

The study showed that twice a day intake of *peperomia pellucida* decoction for four weeks significantly decreased the pain, stiffness, and disability in almost all the respondents, this is in accordance with the comparison the mean scores before and after the decoction using the paired t-test, which showed that there was a significant decrease in the pain scores ( $p < 0.05$ ), and the eta-squared of 84.89% that the effect was due to the decoction; the disability scores also significantly decreased ( $p < 0.05$ ) and the eta-squared of 81.50% that the effect is due to the decoction; while the stiffness scores although there is significant decrease in the mean scores ( $p < 0.05$ ) was only 48.63% possibility that the change is due to the effect of the decoction, this showed that the decoction is not as effective regiment in decreasing the stiffness as it would in decrease the pain, and disability scores. The non-parametric wilcoxon signed ranked test indicates if the respondents experience a decrease, increase or no change in the mean scores of the respondents before and after the decoction, it showed that all the respondents has a decrease in the pain and disability scores, while 6 (19%) of the respondents has experienced that their stiffness scores increased, this also proves that the decoction is a

not as effective to counter the patient's stiffness conditions. These effects are probably due to the analgesic, and anti-inflammatory actions of the *peperomia pellucida* herb, as what were shown in the studies done by de Fatima Arrigoni-Blank et. al. in Brazil, this study was published in the journal of ethnopharmacology volume 91, April 2004.

The difference noted between the twice a day *peperomia pellucida* decoction and the ibuprofen is the effectivity time. Most respondents under the *peperomia pellucida* decoction claimed that it took them at least two to four days of continuous intake of the decoction before they would notice an appreciable abatement of their pain, stiffness and disability thus commencing the improvement on the activities of daily living, while as to taking the ibuprofen they experience reduction of pain and stiffness sooner like in four to six hours. Majority of the respondents take 1 to 2 pills of ibuprofen each day during pain exacerbation, and majority of the patients experience exacerbation of pain almost everyday or every other day.

As far as the safety and side-effects of the *peperomia pellucida* decoction and the ibuprofen is concern, there was no adverse effects noted during the entire study using either the twice a day decoction and the ibuprofen, although the respondents were advised to just take the ibuprofen as needed or not more than 2 tablets in 6 to 8 hours interval per day for their pain exacerbation. Although the *peperomia pellucida* has no known side effect it was postulated that some people might be having hypersensitivity reactions to its mustard-like odor according to drug online webpage, ([www.drugs.com](http://www.drugs.com)). Also based on the studies done by de Fatima Arrigoni-Blank et. al. that the *peperomia pellucida* has a low toxicity even at LD<sub>50</sub> *peperomia pellucida* (5000mg/kg).

Cost-effectiveness analysis was not done in the study, since both the twice a day decoction and ibuprofen are not comparable as to its outcome which comprises of the effect, drug potency, drug efficacy. Although both intervention has a similar effect which is to reduce pain, stiffness and disability on the respondents, but the two interventions are not statistically comparable in the study.

The weakness and limitation of the study, first and foremost is time insufficiency. The baseline scores should be comparable to the washout scores, but due to time insufficiency, it might have contributed to the scores not returning to baseline. Also close monitoring of the research respondents with regards to compliance should be done on the different phases of the study which includes the decoction, ibuprofen, and washout phases to prevent cross contamination on the effects of treatment, but this limitation is often too difficult to address in since this study doesn't confine the respondents for close monitoring.

Both the twice a day *peperomia pellucida* decoction and the ibuprofen has significant effect in the reduction of pain, stiffness and disability scores using the WOMAC arthritis index in respondents with knee joint rheumatism.

## CHAPTER VI

### CONCLUSION AND RECOMMENDATION

Based on the results, it was concluded that the twice a day intake of peperomia pellucida decoction has indeed an effect in decreasing the pain, stiffness and disability scores on the WOMAC Arthritis Index in patients with knee joint rheumatism, although the decoction has a weak action in decreasing the stiffness scores. In the Ibuprofen phase; taking into consideration that ibuprofen is one of the standard treatments for joint rheumatism, one of which is the knee joint rheumatism, all presented in decrease in the mean scores on pain, stiffness and disability with similar efficacy. The effect of the twice a day decoction and the ibuprofen is not statistically comparable, due to the fact that biases were not eliminated during the study.

#### **Recommendation**

The researcher recommends that if this study will be followed up, consider revising some methods in the study, one of which is the randomization of the research respondents so that all the experimental, control or placebo groups will have similar baseline data before the intervention, blinding methods should also be implemented to avoid all the possible biases. Lastly, an addition of a placebo or a non-pharmacologic interventional approach as treatment would be favorable since it will also open up other possibilities as to its effect on the treatment of knee joint rheumatism.

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## APPENDIX A

### Informed Written Consent

---

Date

I, \_\_\_\_\_, agreed to participate as respondent, in the research study entitled “*The effect of twice a day intake of peperomia pellucida decoction versus ibuprofen in the pain, stiffness, and disability scores using WOMAC arthritis index on patients with lower extremity rheumatism*”

The study has been well explained to my understanding by the researcher, affixed herein is my signature which may serve as my voluntary willingness to participate.

---

Witness

---

Respondent

## **APPENDIX B**

### **Preparation of the Peperomia Pellucida Decoction**

#### **Materials**

200-300 grams of peperomia pellucida leaves

500 ml water

Clean Filter cloth

500 ml plastic bottle

Clay pot

#### **Procedure**

1. Wash the peperomia pellucida leaves.
2. Mix the washed peperomia pellucida leaves and 500 ml water in the clay pot.
3. Allow to simmer under low fire for 15 minutes.
4. Filter out the leaves from the decoction.
5. Collect the decoction in the 500ml bottle.

#### **Dosage**

The 500ml bottle should be taken in 2 divided dosages per day; that will yield 250ml of the decoction in the morning and 250ml in the evening.

## **APPENDIX C**

### **The Control Using Ibuprofen**

#### **Materials**

50 pieces of 400mg Ibuprofen for each respondent

#### **Dosage**

The respondents of the study were advised to take ibuprofen as needed for their rheumatic condition with all the adverse effects explained and with absolute caution. The researcher advised the patient to take 1 pill of ibuprofen every 6-8 hours, may take not more than 3 pills a day ( $>1200\text{mg/day}$ ).

#### **Special Care**

Special care was taken during the ibuprofen phase, wherein the respondents were monitored for any symptomatic abdominal adverse conditions, nausea, dizziness, and hypo or hypertension.

## APPENDIX D

### The WOMAC Agreement and Contract

<b>WOMAC™ 3.0/3.1 ACADEMIC USER AGREEMENT (2008)</b>
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The following agreement defines the conditions under which the WOMAC<sup>+</sup> 3.0/3.1 Indices (including their original, alternate language computerised and special feature versions) are provided for use. The conditions are as follows:

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11. The Index will not be modified in any way, or used to create modifications or alternate forms, and will not be used in the development or validation of new outcome measures.
12. The Principle Investigator will provide an original copy of the latest version of the Index User Guide to each person supervising the administration of the Index.

I accept all of the aforementioned conditions to use the WOMAC™ 3.0/3.1 Index in a

study entitled "The Effect of twice a day intake of Peperomia Pellucida decoction in the Pain, Stiffness and Disability scores using WOMAC Arthritis Index on patients with knee joint rheumatism", in 50 patients.

Signed \_\_\_\_\_

Name FERDINAND IMBING UY

Date AUGUST 11, 2008

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# CURRICULUM VITAE

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