THE ANALGESIC ACTIVITY OF OREGANO *(Origanum vulgare* L.*)* LEAF EXTRACT ON SPRAGUE DAWLEY RATS

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ENDORSEMENT

This research entitled "**THE ANALGESIC ACTIVITY OF OREGANO *(Origanum vulgare* L.*)* LEAF EXTRACT IN SPRAGUE DAWLEY RATS",** prepared by **CHERMAGNE YRRAH P. ABIQUI, ACE JHUNIEL V. MANZO, MIKAELA KATHRYN C. SOLIVIO,** and **ANDREI JULLIAN C. TAPON**, in partial fulfillment of the requirements for Practical Research 2 of Grade 12 STEM-Health Allied Strand (HAS), has been examined and recommended for acceptance and approval for final oral defense.

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Jessyree J. Taño, LPT
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DEDICATION

The success of this research study, entitled "The Analgesic Activity of Oregano *(Origanum vulgare* L.), is dedicated to the continued advancement and the pursuit of safer, more accessible alternatives to pharmaceutical treatments.

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The Researchers

ABSTRACT

Pain is a universal experience, and the search for effective, natural analgesics has driven researchers to explore medicinal plants with therapeutic potential. Oregano (Origanum vulgare L.), commonly known for its culinary uses, has been historically utilized in traditional medicine for its anti-inflammatory and pain-relieving properties. This study investigates the analgesic activity of Oregano leaf extract through the Plantar Test (Hargreaves Method). The phytochemical analysis of Origanum vulgare extract revealed the presence of bioactive compounds, including flavonoids, polyphenols, saponins, and reducing sugars. These compounds act through multiple biological pathways, influencing nociceptive responses and inflammatory mediators. The Plantar Test was conducted on experimental groups treated with varying concentrations of Oregano extract (25%, 50%, and 75%), alongside negative (distilled water) and positive (Paracetamol syrup) controls. The results indicated a dose-dependent relationship, with the 75% concentration demonstrating significantly greater withdrawal latency compared to lower doses. Statistical analysis using ANOVA and Tukey's Test confirmed significant differences between the treated groups. The 25% Oregano extract showed minimal pain relief. The 50% concentration exhibited moderate analgesic activity, significantly better but lower than Paracetamol. The 75% Oregano extract displayed the highest analgesic effect among the Oregano groups, approaching but not exceeding the efficacy of the positive control (Paracetamol). These findings suggest that Oregano extract holds promise as a complementary or alternative pain management solution. This research contributes to the growing body of evidence supporting the pharmacological potential of plant-based medicine.

Keywords: *Oregano (Origanum vulgare); analgesic; pain management; alternative medicine; complementary medicine*

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INTRODUCTION

Background of the Study

Helen Keller once said, “Although the world is full of suffering, it is also full of the overcoming of it.” Indeed, this statement underscores a profound truth: pain is a universal experience that most people endure at some point. Generally, pain or *algesia* refers to unpleasant bodily sensations often triggered by the nervous system, ranging from mild discomfort to debilitating agony (Gabbey, 2021). According to Raja et al. (2020), the current definition of pain by the International Association for the Study of Pain (IASP) is described as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” Healthcare professionals and researchers in pain have widely accepted this definition, and numerous organizations, including governmental and non-governmental organizations such as the World Health Organization, have adopted it. It is now a standard reference for researchers and healthcare providers.

It was further emphasized that pain can manifest in various degrees, encompassing a wide range of feelings and sensations. This variability is significant; even individuals with similar conditions or injuries may experience pain differently. From mild discomfort to debilitating agony, the spectrum of pain is vast and profoundly unique to each individual’s perception (Noe-Steinmüller et al., 2024). Meanwhile, suffering is defined by Cassell (2022) as a state of severe distress associated with events that threaten a person's integrity and intactness. In the context of physical pain, suffering poses significant challenges for clinical care and pain research.

As Johnson (2020) points out, pain serves as the body's critical defense mechanism, however, managing pain effectively can come at a considerable cost. Caldwell (2024) emphasizes the two major types of pain. One is chronic pain, which lasts more than three months and can be particularly burdensome, affecting daily activities, relationships, and work. It is estimated that approximately 30% of adults worldwide experience chronic pain. Meanwhile, acute pain, typically linked to injury or illness, resolves within three months. Moreover, according to Hadi et al. (2019), pain ranks among the most common chronic health problems, affecting about 1 in 5 individuals in Europe, and has been designated a global public health research priority. Furthermore, Rikard et al. (2023) report that, between 2019 and 2021, the prevalence of pain among adults in the United States ranged from 20.5% to 21.8%, with high-impact pain affecting 6.9% to 7.8% of the population. Notably, an estimated 51.6 million adults (20.9%) reported pain in 2021, while 17.1 million (6.9%) experienced high-impact pain. In Asian nations, Pacific (2023) notes that the percentage of adults suffering from pain ranges from 7.1% to 90.8%.

The failure to manage pain can significantly reduce a person's quality of life and productivity. Wang and Thyagarajan (2020) state that untreated pain can lead to serious health complications for a substantial portion of the population. Unaddressed pain may have a detrimental influence on an individual's quality of life. Bernhard (2024) elaborates on this by noting that pain often hinders individuals from performing everyday tasks that others may take for granted, resulting in significant discomfort. When pain is unmanaged or inadequately managed, it can severely affect one's quality of life, daily functioning, self-care, work, and relationships. Nambisan (2023) further emphasizes that pain can complicate daily chores, interfere with

professional pursuits, and disrupt social interactions during flare-ups. Additionally, pain can adversely affect sleep quality, creating a cascading effect on various aspects of health and wellness.

Despite pain accounting for 20% of all health-related suffering worldwide, making it one of the most prevalent symptoms, pain management strategies and painkillers, particularly opioid analgesics, have proven inadequate (Bhadelia et al., 2019). While standard analgesic drugs are readily available and widely used, they often come with significant side effects and potential toxicities, such as effects on blood pressure, platelet inhibition, and hepatic injury, which can increase the risk of bleeding (Tadesse et al., 2020). Pain, affecting over 25% of the U.S. population, results in significant morbidity and mortality largely due to ineffective management and reliance on opioids (Dydyk & Conermann, 2024).

Notably, opioids are the most commonly prescribed analgesics. As Pope (2023) notes, the term “analgesic”, coming from *analgesia* meaning to remove pain, encompasses any medicine that alleviates pain. Oesterle (2023) further explains that opioids, also referred to as opiates or narcotics, are a class of pharmaceutical drugs derived from natural or synthetic sources that interact with nerve cells to reduce pain. However, the overuse and misprescription of these medications have led to a troubling public health crisis, with over two million people in the U.S. facing substance use disorders related to prescription opioid analgesics. As to the geographic distribution of opioid consumption, the Americas consumed 41 times more per person than Asia and 103 times more than Africa. Oceania's consumption per person also exceeded that of Europe (Richards et al., 2021). Additionally, a study by Bolshakova et al. (2019) states that Latin and Central America have consistently low levels of opioid

misuse, while Asia has low rates at around 0.35%. South-West and Central Asia have higher opioid use rates, with Afghanistan, Iran, and Pakistan having an average prevalence of 1.5% and 0.8%, respectively. Western Europe has an estimated 0.4% opioid use per year, with Eastern European rates hovering around 1.2% and South-Eastern European rates around 0.8%.

The primary use of opioids is to manage pain due to their effectiveness in alleviating various types of pain. However, managing pain with opioids necessitates careful dose adjustments based on individual clinical responses and side effects. Despite their benefits, opioid use carries a risk of addiction, with misuse—whether legal or illegal—leading to approximately 90 deaths daily in the U.S., as reported by the American Society of Anesthesiologists (Morrone et al., 2019). The risk of developing opioid use disorder is notably high among individuals who misuse these medications. According to Paul et al. (2021), a significant limitation of the chronic use of opioids in clinical settings is the development of analgesic tolerance following repetitive administration. This phenomenon manifests as reduced drug efficacy over time, necessitating increased dosages to achieve therapeutic effects. Unfortunately, this escalation contributes to cellular desensitization and can lead to physical dependence and withdrawal symptoms.

This instance of Western medicine has become the basis of modern healthcare systems. However, Eastern medicine, one of the oldest systems of medicine, including traditional Chinese medicine and Ayurveda techniques, has long existed and offers valuable insights (Santhakumar, 2022). The use of complementary and alternative medicine is expanding quickly in the healthcare sector. It has greatly expanded in all

modern civilizations, despite the outstanding advances in contemporary biotechnology and medical practices (Mortada, 2024).

According to Wheeler (2024), “alternative medicine” is a term that refers to medical treatments used in place of conventional medicine, often referred to as complementary medicine. In 2023, the World Health Organization stated that traditional and alternative medicine, often viewed as pre-scientific, are being recognized for their significant contribution to contemporary science and medicine, along with a long history of traditional remedies and practices evolving into a demand for natural yet effective treatments for various health conditions. These non-invasive, low-cost treatments are available for managing pain without the use of pharmaceuticals; however, due to conflicting and controversial findings, additional clinical research regarding their efficacy is required.

For instance, it includes various disciplines like acupuncture, chiropractic treatment, yoga, and aromatherapy. Acupuncture, a Chinese practice involving the insertion of thin needles at specific body points, has gained global popularity for pain relief, though its efficacy remains disputed (Urits et al., 2020). Chiropractors typically utilize manual therapy, particularly spinal manipulation, yet studies have shown that its effectiveness for spine pain is negligible compared to anti-inflammatory and analgesic medications (Gevers-Montoro et al., 2021). Another promising approach is yoga-based medical therapy, emphasizing physical flexibility and mental relaxation through defined postures. However, research reporting its benefits often relies on subjective measures, leading to inadequate quantitative assessments (Arya et al., 2022). Lastly, aromatherapy, which employs essential oils from aromatic plants for

medicinal purposes, lacks clinical evidence to substantiate its efficacy (Surya & Podar, 2020).

On the other hand, plant-based medicines have become increasingly integrated into contemporary medical practice. According to Khan and Ahmad (2019), herbal medicine is crucial in global healthcare, especially in developing countries where access to conventional treatments is often limited. In 2023, the World Health Organization (WHO) noted that approximately 60% of the global population utilizes herbal remedies, with reliance reaching up to 80% in some developing regions. This trend stems from the belief that plant products are safer, more natural, and generally more affordable than their pharmaceutical counterparts. Furthermore, Nasim et al. (2022) state that this shift towards polypharmacology, where natural compounds target multiple physiological systems, presents promising opportunities for developing effective medications.

Plants offer a rich and diverse source of compounds that have the potential to lead to new drug discoveries. The use of plants as analgesics in alternative medicine predates modern medical practices in developed nations. Since the 1880s, widely recognized active ingredients for pain relief have included morphine (derived from opium poppies), salicylic acid (sourced from the bark of the white willow tree), and tetrahydrocannabinol (obtained from cannabis). Recently, there has been a growing interest in exploring medicinal plants to identify new therapeutic agents that can effectively inhibit or alleviate pain while minimizing adverse effects (Goyal et al., 2023).

Oregano *(Origanum vulgare* L*.)* is a prominent medicinal plant that has been used for centuries to relieve pain and treat various ailments. Moghrovyan et al. (2023) highlight its rich profile in flavonoids and essential oils, which provide significant antioxidant and anti-inflammatory benefits. Oregano oil specifically exhibits notable analgesic properties. Aundhia et al. (2024) observed that its active compounds interact with pain receptors, potentially reducing pain perception. Furthermore, Oregano is recognized for its rich phytochemical composition, which includes essential oils, phenolic compounds, and flavonoids. Among these, carvacrol and thymol are prominent active constituents known for their antimicrobial and anti-inflammatory properties. This diverse range of phytochemicals supports its medicinal applications, particularly in pain management (Bajagai et al., 2021).

Oregano is rich in biologically active compounds, particularly phenolics including terpenes, flavonoids, glucosides, sterols, tannins, resins, and mucilages. Traditionally, Oregano has been used in folk medicine as an expectorant, anti-flatulent, appetite stimulant, diuretic, and sedative. Its extracts are known for their potent antibacterial and antifungal effects due to their high phenolic content. Key active compounds such as rosmarinic acid, luteolin, quercetin, apigenin, and scutellarin contribute to its medicinal benefits (Khorsand et al., 2022). Tawffiq and Almulathanon (2022) further emphasize oregano's historical use in treating narcotic poisoning, convulsions, and dropsy. Its essential oil and leaf extracts are recognized for their natural bactericidal properties, largely from thymol. Dried Oregano leaves have been used to alleviate symptoms of rheumatoid arthritis and swelling, while Oregano tea is commonly consumed for colds, fevers, and menstrual pain.

Additionally, Oregano supports bile production and aids in relieving digestive discomfort.

In South Asia, Oregano is valued for both its culinary and medicinal applications. Traditionally, it has been employed to treat conditions such as convulsive coughs, digestive issues, and menstrual discomfort (Bhadra et al., 2022). In the Philippines, Oregano is recognized for its strong antibacterial properties, attributed to compounds like thymol, carvacrol, and rosmarinic acid, which also confer anti-inflammatory, antifungal, and antiviral capabilities (Bautista et al., 2019).

Moreover, Oregano oil has diverse applications in cosmetics and medicine, providing anti-inflammatory, antiseptic, antibacterial, antifungal, and even antidepressant effects. Traditionally, it has been used to alleviate emotional stress, assist in wound healing, soothe burns, and enhance sleep quality. In ethnomedicine, Oregano has also been utilized in South Asia to address food poisoning, bloating, urinary issues, coughs, headaches, and bronchial problems, as well as managing jaundice, fevers, and vomiting. Its rich phytonutrient content, including thymol, rosmarinic acid, and ursolic acid, further supports its antioxidant properties, helping protect cellular structures from oxidative damage (Beltran & Descarpontriez, 2023).

While some research has explored the medicinal properties of *Origanum vulgare* L., particularly its antimicrobial and antioxidant effects, the research gap lies in the notable lack of quantitative data specifically examining its analgesic (pain-relieving) effects in animal models such as rats. Previous studies have highlighted various bioactive compounds in Oregano, such as phenolic acids and flavonoids, which suggest potential therapeutic benefits; however, empirical evidence specifically validating its analgesic properties remains scarce. This study aims to bridge that gap

by providing rigorous and empirical evidence on the effectiveness of Oregano leaf extract as an analgesic, thereby contributing to a deeper understanding of its potential therapeutic applications. The purpose of this study is to explore the clinical applications of Oregano in pain management in order to offer a plant-based alternative to commercial pain medications.

The significance of this study extends to the broad concept of medicine, as the recognition of natural remedies that offer effective pain management with fewer side effects compared to conventional pharmaceuticals becomes increasingly prevalent. As the medical community seeks alternatives, understanding the analgesic activity of Oregano could aid the development of new pain management strategies. By aiming to establish the analgesic activity of Oregano extract, this research could contribute to the development of new pain management strategies and viable alternatives to commercial pain relief medications.

This study investigates the analgesic activity of Oregano extract as a possible alternative to commercial pain relief medications. Utilizing Oregano as an analgesic offers a convenient method of administration, especially for individuals who wish to avoid the side effects commonly associated with pharmaceutical pain relievers, have difficulty swallowing pills, or prefer traditional herbal remedies. The researchers specifically chose to investigate the analgesic properties of Oregano through ethanolic extraction as it is a simple yet effective procedure where the constituents of the plants can be obtained. This approach allows for a systematic evaluation of the compounds' impact on pain relief at varying concentrations. Moreover, establishing a quantitative basis for Oregano’s analgesic effects could stimulate further research into its role in

pain management, potentially leading to the development of innovative, plant-based analgesics.

The researchers aim to identify the specific constituents in Oregano extract that contribute to its analgesic properties and to clarify the mechanisms by which these compounds exert their effects. By achieving these goals, the study seeks to enhance the scientific understanding of Oregano as a natural pain relief agent and to contribute to the development of alternative pain management therapies. This research could increase awareness among healthcare professionals and the public about Oregano's medicinal benefits, potentially offering innovative approaches for alleviating pain and improving the quality of life for those suffering from various painful conditions.

To maintain focus and clarity, the study outlines its scope and limitations. It will exclusively utilize Oregano leaves, omitting other parts of the plant and excluding other medicinal herbs. Certain plant constituents, such as flavonoids, are heat-labile compounds, meaning that their structure and biological activity can be compromised when exposed to elevated temperatures. To preserve the integrity of these valuable constituents, fresh Oregano leaves will be used in this study. By avoiding any heating processes during sample preparation, the researchers aim to prevent the degradation of flavonoids and other sensitive bioactive compounds, ensuring that the extract retains its full therapeutic potential. By utilizing 25%, 50%, and 75% concentrations, this study aims to thoroughly evaluate the therapeutic potential of Oregano while minimizing any potential risks linked to higher doses, including gastrointestinal irritation. The toxicity of more concentrated doses has not been extensively established, making these lower concentrations a safer choice for assessing the plant's

analgesic effects. The analgesic efficacy will be assessed using female Sprague Dawley Albino rats, employing the Plantar Test (Hargreaves Method) to measure responses to thermal stimulation. The extraction process will concentrate on obtaining the active constituents without isolation, and the study will focus solely on the analgesic effects of Oregano. These parameters ensure that the investigation remains coherent and precise, in alignment with available resources and time constraints.

Conceptual Framework

This study investigates the analgesic activity of Oregano (*Origanum vulgare* L.) leaf extract on Sprague-Dawley rats, framed by a multifaceted conceptual framework. First, the researchers establish Oregano as an herbal medicine, emphasizing its historical and contemporary use in traditional healing practices. Then, the phytochemical profile of Oregano is explored, focusing on flavonoids, which are identified as key analgesic agents. Understanding the pathophysiology of pain is essential, as it provides insight into how flavonoids interact with nerve cells to modulate pain perception. Finally, the researchers employ the Plantar Test (Hargreaves Method) to assess and establish the analgesic activity of the Oregano extract.

A. Oregano (*Origanum vulgare* L.) as an Herbal Medicine

Oregano is a perennial herb that usually grows to a height of 20 to 80 centimeters (8 to 31 inches). It features small, oval leaves that are opposite each other and covered in fine hairs, displaying a rich green hue and a strong and aromatic fragrance. The plant produces clusters of small, tubular flowers that can be pink or purple. Every part of the Oregano plant—leaves, stems, and

flowers—is edible and possesses a range of medicinal benefits (Braganza, 2024).

Oregano has gained recognition in herbal medicine, particularly for its effectiveness in treating pain. Zhang et al. (2019) note that Oregano has traditionally been employed to alleviate discomfort associated with various inflammatory conditions. Rugerri (2023) points out that, although Oregano is often recognized as a popular herb for culinary use, it has a rich history in folk medicine that spans over 2,500 years, making it a valued plant for healing. Oregano can be consumed in various forms, including essential oils, teas, and supplements, offering a versatile option for those seeking natural pain relief. Incorporating fresh or dried Oregano into cooking may help reduce inflammation, and research on the essential oils of the herb reveals strong anti-inflammatory qualities. The plant's antioxidant properties further support its effectiveness against a wide range of conditions, including chronic inflammation. Oregano products are commonly used to treat inflammatory conditions such as rheumatoid arthritis and allergies, while herbal extracts are applied topically for issues like psoriasis, acne, insect bites, and muscle soreness. Known for its antibacterial and antioxidant properties, Oregano deserves a prominent spot in both kitchens and medicine cabinets due to its potent compounds.

Moreover, Sidirapoulou et al. (2022) noted that the combination of Oregano, thyme, and sage essential oils exhibits significant in vitro antioxidant, anti-inflammatory, antimicrobial, and anticoccidial effects comparable to synthetic materials or approved medications. This finding underscores the

necessity for further in vivo studies, particularly in broilers raised without synthetic antioxidants, anti-inflammatory agents, or antimicrobial and anticoccidial drugs. Oregano offers numerous medicinal benefits, including inflammation reduction, antioxidant activity, pain relief, and hepato-, gastro-, and neuroprotective effects. Its essential oil, rich in active ingredients, establishes Oregano as one of the highest-quality herbs available, contributing to its substantial medicinal value. Overall, as more people explore natural alternatives for pain management, Oregano's potential continues to be a noteworthy focus in the field of herbal medicine.

B. The Phytochemical Profile of Oregano *(Origanum vulgare* L.*)*

The therapeutic potential of these plant parts is largely attributed to the presence of bioactive flavonoids (Ullah et al., 2020). The health benefits of Oregano are closely tied to its diverse phytochemical composition. These phytochemicals can be categorized into hydrophilic compounds, such as phenolic components (including flavonoids), and hydrophobic compounds, which encompass terpenoids and essential oils (Veenstra & Johnson, 2019). Understanding these profiles enhances the researchers' knowledge of Oregano's medicinal properties and paves the way for developing targeted therapeutic applications.

Flavonoids, a diverse group of phytochemicals abundant in Oregano and other plants have garnered significant attention for their myriad of health benefits. These compounds exhibit various biological activities, including antioxidant, anti-inflammatory, and anticancer effects (Jones, 2023). Their

capacity to neutralize harmful free radicals is particularly noteworthy, as it protects cells from oxidative damage and inhibits cancer cell proliferation.

Origanum vulgare L. is packed with phytochemicals that contribute to its impressive medicinal properties, especially when it comes to pain relief. One of the key players is carvacrol, a major phenolic compound known for its anti-inflammatory effects. Maczka et al. (2023) found that carvacrol has potent anti-inflammatory effects by lowering the body's levels of pro-inflammatory cytokines and inhibiting the peroxidation of polyunsaturated fatty acids by triggering Superoxide Dismutase and Glutathione Peroxidase. It also has an impact on the immunological response that lipopolysaccharides trigger in the body. Another phenolic compound, rosmarinic acid has potent anti-inflammatory properties and may help reduce pain by inhibiting the activity of certain enzymes involved in the inflammatory process. Nadeem et al. (2019) explain that rosmarinic acid affects tumor cell proliferation, apoptosis, metastasis, and inflammation, among other aspects of carcinogenesis. However, it also has strong antioxidant, antibacterial, anti-inflammatory, and possibly antidepressant and anti-aging properties. Oregano's rich mix of natural compounds, especially carvacrol and rosmarinic acid, makes it a great option for pain relief. These compounds work to reduce inflammation and help with pain by affecting important processes in the body.

Moreover, flavonoids can modulate immune responses by influencing the release of cytokines and chemokines, which are crucial for the body's inflammatory response. Ferraz et al. (2020) observed that flavonoids interact with pain receptors (nociceptors) and influence pain signaling pathways. By

modulating the activity of neurotransmitters involved in pain perception, they can reduce the sensation of pain. Al-Khayri et al. (2022) highlighted that by inhibiting pro-inflammatory enzymes and regulating cytokine expression, flavonoids offer potential therapeutic pathways for addressing a range of inflammatory conditions, such as arthritis, cardiovascular diseases, and even neurodegenerative disorders. The role of flavonoids is highlighted in controlling the expression of pro-inflammatory molecules and cytokines, suggesting their importance in developing anti-inflammatory therapies.

Flavonoids are heat-sensitive compounds that can lose their structural integrity and biological activity when exposed to high temperatures. Sharma et al. (2019) state that flavonoids are known for their distinctive flavor and aroma, as well as their numerous health benefits. Heating or drying leaves often leads to the loss of these heat-sensitive compounds, diminishing their nutritional value. The processes of oxidation, thermal degradation, and leaching are all detrimental effects of heating on the bioactive compounds, and must be avoided to prevent the degradation of flavonoids and other delicate bioactive compounds, thereby maximizing the extract's therapeutic potential.

The toxicity of Oregano oil, a concentrated substance primarily derived from the plant's hair-like structures rather than its leaves, is well documented. Generally, Oregano oil is well tolerated; however, higher doses may lead to several side effects, including abdominal discomfort, heartburn, constipation or diarrhea, nausea, and vomiting. Despite this established understanding, research focused on the toxicity of Oregano extract remains limited. It is

currently unclear whether the cytotoxic effects in Oregano oil are due to a specific compound within the extract or a synergistic interaction among various components (Coccimiglio et al., 2019).

In total, Oregano is not only a popular culinary herb but also a potent source of bioactive compounds that confer significant health benefits. Its anti-inflammatory, analgesic, and antibacterial properties, coupled with the extensive potential of flavonoids, underscore its importance in both traditional and modern medicine. Continued research into the phytochemical composition and mechanisms of Oregano will further unlock its therapeutic potential, offering promising avenues for the treatment of various ailments and enhancing overall health.

C. The Pathophysiology of Pain and the Possible Efficacy of Oregano as an Analgesic

Pain arises from the brain's higher processing centers, reflecting the unpleasant emotional and sensory experience triggered by these nerve signals (Chen et al., 2023). Pain serves a vital physiological function, alerting individuals to harmful stimuli and reducing the risk of tissue damage while protecting against ongoing injury. However, when pain is unmanaged or improperly treated, it can have detrimental effects (Liu & Kelliher, 2022). Pain starts when something hurts, like pressure, heat, or chemicals. These painful signals travel through the nerves and involve special chemicals called neurotransmitters that help send messages.

A significant aspect of Oregano's medicinal profile is its anti-inflammatory potential. Studies involving in vitro research and animal models

have demonstrated that carvacrol, a key compound in Oregano, can effectively modulate inflammation. Flavonoids interact with nociceptors, also known as pain receptors, and affect the pathways involved in pain signaling, significantly reducing the feeling of pain, a significant component of the inflammatory response. For example, one study showed that carvacrol alters gene expression related to inflammation, helping to prevent obesity in mice (Johnson, 2024). This compound also significantly reduces edema in various animal trials, highlighting its relevance in managing inflammatory conditions. Beyond its anti-inflammatory effects, Oregano exhibits notable analgesic properties. Research indicates that Oregano extracts can lead to an impressive 97.83% reduction in spasms, which underscores its potential for pain relief and highlights its applications in pharmacological research (Zejli et al., 2024). Furthermore, it has been shown that Oregano extracts activate both intrinsic and extrinsic apoptotic pathways, leading to cell death and growth arrest, indicating that the extract's cytotoxic effects arise from the synergy of its constituents rather than individual components (Rios & Andújar, 2020).

Carlson (2019) stated that, to nearly any painful stimulus, the initial response is a nearly immediate removal from the source of the pain. Actions determined by cognitive decisions frequently follow the first emotion. The local nerve fiber endings' activation threshold is lowered by chemicals released from damaged cells as the initial pain input travels through the epidermis. Along the dendrites of the sensory nerve fibers (thermal nociceptors) supplying the region, this triggers the release of an action potential. Packed with phytochemicals, *Origanum vulgare* L. has remarkable medical qualities,

especially when it comes to pain treatment. Natural substances, such as flavonoids, phenolic compounds, and essential oils, are present in this fragrant herb and contribute to its therapeutic benefits. By targeting key inflammatory mediators and pathways, flavonoids effectively reduce pain associated with inflammation, making them valuable compounds in pain management strategies.

D. Plantar Test (Hargreaves Method)

The Hargreaves method, often referred to as the plantar test, was specifically designed to evaluate thermal pain sensitivity in rodents, including rats and mice (Cheah et al., 2019). This method has been utilized in studies related to pain sensitization and the recovery of thermal pain response after neural injury and regeneration. This method involves exposing the plantar surface of a rodent's paw to a thermal stimulus, allowing researchers to measure the time taken for the animal to withdraw its paw. This withdrawal time serves as a critical indicator of pain sensitivity (Hernández et al., 2022).

Furthermore, according to Harvard Apparatus (2021), the Hargreaves method is a key technique for assessing thermal nociception in laboratory rodents, emphasizing the measurement of withdrawal latency in response to a radiant heat source. This method not only provides insights into pain mechanisms but also aids in the evaluation of analgesic efficacy, making it indispensable in pharmacological testing. By conducting multiple trials and ensuring a controlled environment, researchers can enhance the reliability and reproducibility of the findings. Moreover, it facilitates a deeper understanding of chronic pain, inflammation, and neuropathy through pathophysiological

studies. Ethical considerations regarding animal welfare are paramount, requiring strict adherence to established guidelines to mitigate potential distress and suffering. While the method excels in measuring acute pain, it is important to acknowledge its limitations in capturing the nuances of chronic pain dynamics.

In 2021, IITC Life Science, an institute focusing on manufacturing equipment for research, reported that the Hargreaves method effectively evaluates thermal pain responses. This feature is particularly critical, as emotional states can significantly impact pain responses, potentially skewing experimental results. The method's sensitivity allows researchers to detect subtle changes in pain thresholds, making it an invaluable tool in pharmacological studies focused on analgesic efficacy. The importance of standardizing the testing environment to minimize variability is underscored, which is crucial for ensuring consistent and reliable outcomes in pain research. This careful calibration enables a more accurate assessment of pain mechanisms, ultimately contributing to a greater understanding of potential therapeutic interventions.

Withdrawal experiments are behavioral techniques used to evaluate an animal's response to a nociceptive stimulus, providing a measure of pain-like behaviors. This is a widely used method for quantifying nociception in animal models. Typically, the stimulus is applied to the animal's paw, and the time it takes for the animal to withdraw its paw is recorded as the latency to withdrawal. When the paw is withdrawn, it indicates that an action potential has been generated in the nociceptors, signaling pain and prompting the

withdrawal response (Modi et al., 2023).

If the extract possesses analgesic properties, an increase in withdrawal time will be observed, suggesting decreased sensitivity to pain when compared to the negative control group – a control group that does not receive the extract. This method thus provides a reliable means of quantifying the analgesic effects of Oregano, shedding light on its potential therapeutic applications (López et al., 2021).

Operational Paradigm

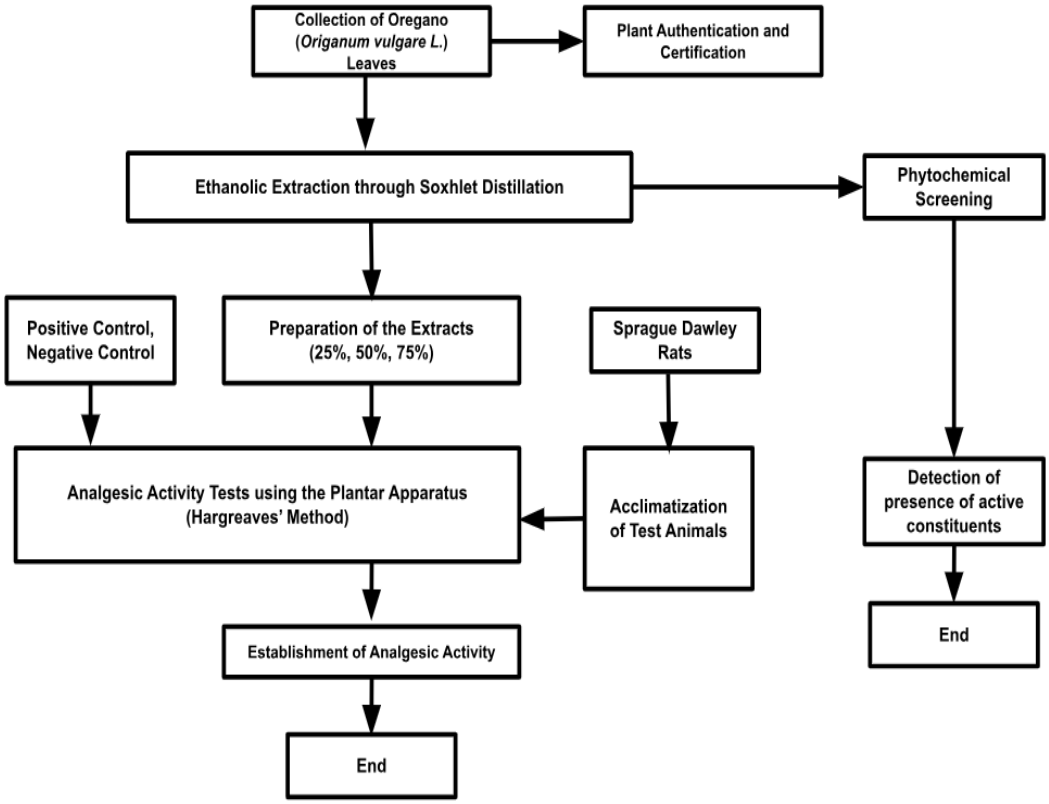

Figure 1. Operational Paradigm of the Study

The research process began with the collection of Oregano plant samples. Once collected, these samples underwent an authentication process, where experts verified their identity and certified their authenticity. This step was crucial to ensure that the correct species is being studied, as variations in plant identity can significantly impact the composition and efficacy of the extract.

Following authentication, the researchers proceeded with the extraction of the plant material through Soxhlet distillation, a technique that allows for the efficient removal of the solvent. This method preserved the integrity of the bioactive compounds within the Oregano leaves while concentrating the extract for further analysis. The resulting extract was then subjected to phytochemical screening, a systematic process designed to identify the presence of active constituents, such as essential oils, flavonoids, and phenolic compounds, which are known for their potential therapeutic effects.

Once the extract has been prepared, the next phase involved the acquisition and acclimatization of test animals, specifically female Sprague Dawley rats. Acclimatization is essential to minimize stress and ensure that the animals are comfortable in their new environment, which can influence the outcomes of the experiments. After a suitable acclimatization period, analgesic activity tests were conducted to evaluate the pain-relieving effects of the Oregano extract.

These tests compared various concentrations of the plant extract—specifically 25%, 50%, and 75%—against established positive and negative controls. The positive control consisted of commercially available paracetamol syrup, a known and widely used analgesic, while the negative control was distilled water without therapeutic

properties. By employing this comparative approach, the researchers discerned the efficacy of the Oregano extract at different dosages.

The analgesic effects will be observed using the Plantar Test (Hargreaves Method), a well-established pain model, which measures the response of the rats to thermal stimulation. This method provides a reliable assessment of pain sensitivity and helps quantify the analgesic properties of the extract.

Statement of the Problems

This study aims to evaluate the analgesic activity of Oregano *(Origanum vulgare* L.*)* leaf extract on Sprague Dawley rats. Specifically, it aims to answer the following questions:

1. What phytochemical constituents are present in Oregano (*Origanum vulgare* L.)?
2. Which concentration of the Oregano leaf extract has the highest analgesic activity in the rat model, using the plantar apparatus (Hargreaves method)?
3. Are there significant differences in the analgesic activity between and among the different concentrations of the Oregano leaf extract and the positive control?

Hypotheses

The researchers clearly and concisely articulate the proposed relationships or predictions they will test in the study by stating the hypotheses. The following hypotheses are derived from related literature and logical reasoning. The researchers hypothesize that:

1. Null Hypothesis (H_0): There are no significant differences in the analgesic activity between the different concentrations of the Oregano leaf extract and the positive control.

Alternative Hypothesis (H_a): There are significant differences in the analgesic activity between the different concentrations of the Oregano leaf extract and the positive control.

CHAPTER II

METHODOLOGY

Research Design

This study utilized the quantitative experimental research design to rigorously evaluate the impact of Oregano extract on pain relief in Sprague Dawley rats. This enabled the researchers to draw definitive conclusions about the analgesic properties of Oregano leaf extract. According to Zubair (2023), experimental research design is fundamental for establishing cause-and-effect relationships between variables. By systematically manipulating independent variables—specifically, utilizing various concentrations of the Oregano extract, positive and negative controls—and observing their effects on a dependent variable (pain response), researchers determined the analgesic properties of the extract while controlling the extraneous factors that could skew the results. This scientific methodology was essential for producing reliable data that can be used as a basis for future therapeutic applications. By conducting experiments with a clear methodology and control over variables, the researchers can conclude the impact of the Oregano extract on pain relief in rats. This approach allowed for a systematic and structured investigation into the analgesic properties of the Oregano leaf extract.

Duration and Locale of the Study

The study spanned from September to December 2024, covering the First Semester of the 2024-2025 Academic Year. This time frame allowed for adequate acclimatization of the test subjects and sufficient time for data collection to ensure a strong statistical analysis.

The research was conducted in the Pharmacy Laboratory (S3-501/502) at the Campus for Health Sciences, Lorma Colleges, Carlatan, City of San Fernando, La Union. The Lorma Animal Laboratory was utilized for the acclimatization and conduct of bioassays on the test animals. (*See Appendix A for the Communication Letter for the Utilization of the Animal Laboratory and the Pharmacy Laboratory)*

Data Gathering Tools

The study aimed to assess the analgesic activity of *Origanum vulgare* L. through experimental analysis which involved administering varying concentrations of Oregano extract to test subjects, specifically using the Plantar Apparatus as a pain model. Experimental analysis is a systematic approach that utilizes controlled experiments to explore how specific factors influence outcomes. This method involved manipulating one or more independent variables—such as treatment concentrations—while observing changes in dependent variables. By controlling extraneous factors, researchers can reliably establish causal relationships (Harris, 2020). Employing experimental analysis provided the empirical evidence needed to support the clinical applications of Oregano as a natural pain management alternative.

A data collection sheet *(See Appendix B for the Sample Data Collection Sheet)* was made by the researchers to be used to record pain response data, including withdrawal latency time, and the dosages related to the effects of the treatments. The majority of the instruments that the researchers utilized in this study, including the apparatuses like beakers, bunsen burners, stirring rods, the Soxhlet apparatus, and water bath, as well as the Plantar Apparatus, were available at Lorma Colleges' College of Pharmacy Laboratory located at Carlatan, City of San Fernando, La Union. The use of these tools was critical for both the preparation and extraction processes, which

were essential in isolating the active compounds responsible for the analgesic activity, preparing for the different concentrations of the extract, and performing the plantar test.

Data Gathering Procedures

The administration of the test to the albino rats was conducted by a registered pharmacist and a lab assistant, as the researchers lacked technical expertise in handling the plantar apparatus. Although the researchers were not directly involved in administering the test, they participated in the acclimatization of the test animals and ensured that proper procedures were followed throughout the process. To further ensure safe handling, the researchers attended a safe animal handling seminar. Throughout the experiment, protective measures were strictly observed, with the wearing of gloves, lab gowns, and keeping their hair neat and out of their faces. These precautions were in place before, during, and after the test to maintain the safety of both the researchers and the animals involved.

A. Collection, Preparation, Extraction, and Phytochemical Screening of the Plant Sample

a. Collection of the Plant Sample

The first step in this study was the collection of *Origanum vulgare* L. leaves. The leaves were harvested by cutting them at the base of the leaf near the petiole. Following this, the leaves underwent a process known as garbling, which entailed the removal of extraneous materials, including the midrib, dirt, and any contaminants such as spider webs and dust. This meticulous process was essential to ensure that only clean and viable plant material was used for further analysis.

b. Plant Authentication

An Oregano plant was submitted to Don Mariano Marcos Memorial State University - North La Union Campus (College of Agroforestry and Forestry) at Sapilang, Bacnotan, La Union to verify the authenticity of the plant species. This ensured that the plant family, genus and species are correctly identified. *(See Appendix C for the communication letter for plant authentication, and Appendix D for the certificate of plant authentication)*

c. Preparation and Extraction of the Plant Sample

Once collected, the leaves were washed with distilled water to remove any residual contaminants and then dried to prepare for extraction. Since fresh leaves were used, the extraction process employed a Soxhlet apparatus using 95% ethyl alcohol. The crude extract was then subjected to Soxhlet distillation, a well-established method for producing a concentrated extract, devoid of the extracting solvent while minimizing thermal degradation. Soxhlet distillation is a method primarily used for the extraction of lipophilic compounds from solid materials. The process relied on the repeated cycling of a solvent through the solid sample, allowing for efficient extraction of desired compounds. In Soxhlet distillation, the sample is placed in a thimble, which is then situated within a round-bottom flask containing the solvent. The apparatus is connected to a condenser, which condensed the vaporized solvent. The solvent travelled into the condenser, where it cooled and returned to liquid form. This liquid then dripped into the

thimble containing the solid sample. The solvent percolated through the sample, dissolving the target compounds and then returning to the flask once it reaches a predetermined level. This cycle continued until the extraction is complete, allowing for efficient and thorough extraction of the desired substances (Aryal, 2022). This technique ensured that the bioactive components are concentrated effectively, thus preserving their potential therapeutic properties.

d. Phytochemical Screening

The plant samples were submitted to Lorma Colleges - College of Pharmacy for phytochemical analysis. The extracted samples underwent phytochemical screening to identify and quantify the active constituents present in the Oregano extract. This screening was vital for establishing the potential analgesic properties of the plant and understanding the mechanisms through which it may exert analgesic effects. *(See Appendix E for the communication letter for phytochemical testing, Appendix F for the phytochemical testing results)*

B. Analgesic Activity Testing

a. Test Animals

i. Sprague Dawley Rats – Test Animal for Analgesic Activity Testing

Sprague-Dawley rats were selected as the test animals for the analgesic activity assessment. This species is frequently used in pharmacological studies due to its well-documented physiological responses and established behavioral paradigms,

making it an ideal model for investigating pain relief. Female rats were obtained from a licensed pet shop to ensure health and genetic consistency. Female rats were specifically chosen due to their higher sensitivity to pain according to pain models. *(See Appendix G for the certification of the pet shop, Appendix H for the researchers' certificates on animal handling, Appendix I for the Application for Animal Research, and Appendix J and K for the Research Permit from the Bureau of Animal Industry)*

ii. Acclimatization of Rats

Before testing, fifteen Sprague-Dawley rats underwent a two-week acclimatization period in their new environment. This was crucial for minimizing stress-related variability in test results, ensuring that the observed effects are attributable to the treatment rather than extraneous factors. During this period, the rats were consistently fed GMP pellets, and their weight was recorded at the end of the acclimatization phase.

iii. Grouping and Labeling of Sprague Dawley Rats

The acclimatized rats were grouped and labeled to facilitate accurate tracking of each group's responses to the different concentrations of the plant extract. Proper labeling was essential for maintaining the integrity of the experimental design and ensuring that data is accurately recorded and analyzed. The rats were divided into five groups, with three rats per group: Group A (25% extract), Group B (50% extract), Group

C (75% extract), Group D (positive control), and Group E (negative control). Each rat within each group were labeled accordingly: Group A - A1, A2, A3, Group B - B1, B2, B3, and so on.

b. Preparation of Oregano Concentrations

Various concentrations of the Oregano extract were prepared, specifically at 25%, 50%, and 75%. These concentrations allowed for an assessment of the dose-response relationship, which is critical for determining the optimal therapeutic dosage.

For the 25% concentration, the preparation involved mixing 5 ml of concentrated extract (solute) with 15 ml of distilled water (solvent). The 50% concentration consisted of 10 ml of concentrated extract combined with 10 ml of distilled water. Finally, the 75% concentration was prepared by mixing 15 ml of concentrated extract with 5 ml of distilled water.

c. Test Controls

Positive controls, comprising known analgesic agents, were established to provide a benchmark for evaluating the effectiveness of the Oregano extract. This comparative analysis was essential for validating the experimental results and confirming the analgesic properties of the extract. During the treatment phase, Group D received a dosage of 12.5 mg/kg of a standard analgesic. For example, for a rat weighing 120 g (0.12 kg), the dose calculated will be 1.8 mg, derived from a preparation of paracetamol (120 mg/5 ml).

Consequently, the dosage for rat D1 will be 0.075 ml, which was administered using an insulin syringe.

d. Method of Administration

After weighing the rats and determining the appropriate dosing volume, the doses were administered to the rats. A 16-18 gauge feeding tube about 2 inches in length was utilized. An oral gavage is used when a specific volume of an agent needs to be administered orally. First, the appropriate length of the gavage tube was measured, from the tip of the animal's snout to the bottom of the sternum, marking it at the nose level to prevent excessive insertion. The animal's head was gently extended backward to align the neck and esophagus. The tube was placed into the diastema of the mouth and advanced smoothly along the upper palate until it reaches the esophagus; if there was any resistance, the tube was withdrawn and reinserted. Once properly positioned, a syringe is attached to administer the material without rotating the tube to avoid esophageal rupture. After dosing, the tube is gently removed at the same angle as insertion, and the animal is returned for monitoring for 5-10 minutes for any signs of distress or labored breathing.

e. Method for Testing Analgesic Activity

The analgesic activity was assessed using standardized methods. Pain induction was accomplished through Plantar Test (Hargreaves Method), a specialized apparatus designed to evaluate the rats' sensitivity to nociceptive stimuli.

After 30 minutes of administering the applicable treatment based on grouping, the rats were placed in the compartment of the plantar apparatus. A probe was positioned beneath the compartment and pointed at the paw of the rat. For uniformity purposes, the front right paw was used. The probe was then clicked, which prompted the start of the timer. It was again clicked once the rat lifted its paw. The number of seconds that it took for the rat to lift its paw is then recorded.

f. Determination of Analgesic Activity

Finally, researchers determined the analgesic activity by analyzing the response of the rats to the different concentrations of the plant extract. This evaluation helped in understanding the extract's efficacy and potential for further development as a therapeutic agent.

Treatment of Data

Treatment of Data 1: There will be no statistical tool to evaluate the Statement of the Problem 1. Instead, the basis was the phytochemical analysis of the Oregano leaves, which will determine its phytochemical profile and constituents through ethanolic extraction through Soxhlet distillation. This analysis enabled the researchers to find out whether the Oregano extract possesses analgesic properties.

Treatment of Data 2: To answer Statement of the Problem 2, the researchers calculated the mean to measure the concentration of Oregano leaf extract that exhibits the most effective analgesic activity. The mean average of the withdrawal latency time was calculated for each group. This enabled the researchers to identify

the concentration that showed the highest analgesic activity in alleviating pain in the rats during the plantar test. The extract concentration that exhibited a more prolonged time of exposure will be considered the most effective. This allowed a clear comparison of efficacy among the different extract concentrations.

Treatment of Data 3: To answer Statement of the Problem 3, one-way analysis of variance (ANOVA) was employed, accompanied by Tukey's test for post hoc analysis. Analysis of Variance (ANOVA) is a statistical technique utilized to compare the means of two or more groups. It assists researchers in determining the statistical significance of differences among group means, allowing for the assessment of whether observed variations are likely due to chance or reflect true differences (Shi et al., 2019). ANOVA statistically analyzed how different concentrations of Oregano leaf extract affect pain response in Sprague Dawley rats by comparing the pain responses across groups treated with varying concentrations (25%, 50%, and 75%).

If ANOVA indicates significant differences, Tukey's test will be applied as a post hoc analysis, with a 0.05 level of significance. According to McLeod (2023), a 0.05 level of significance is the standard level being applied to experimental research. It allows the researchers to identify which specific groups differ from one another, thus allowing a 95% confidence interval and a 5% risk in concluding that a difference exists. This step further clarified the effectiveness of different concentrations of Oregano in pain relief, contributing valuable insights into its potential therapeutic applications. This statistical approach determined if there are significant differences in analgesic activity between the formulated extract and commercially available paracetamol syrup, providing a comprehensive understanding of the extract's effectiveness in comparison to standard analgesics.

CHAPTER III

RESULTS AND DISCUSSIONS

This chapter demonstrates and discusses the study's findings to investigate the analgesic activity of *Oregano* (*Origanum vulgare* L.) leaf extract, focusing on its potential therapeutic properties in pain management. The primary objective of this study was to determine the analgesic activity of *Origanum vulgare L.* and to evaluate the analgesic effects of different concentrations of Oregano leaf extract using animal models. The results are systematically presented in tables, with corresponding statistical analyses and comprehensive discussions, to provide a clear interpretation of the effectiveness of Oregano leaf extract as a potential analgesic agent. The findings are discussed in light of existing literature.

Table 1. The Phytochemical Constituents of Oregano (*Origanum vulgare* L.) Leaf Extract

Type of Test	Result	Description	Detected Phytochemical
Mayer's Test	(-)	Absence	Alkaloids
Hager's Test	(-)	Absence	Alkaloids
Molisch Test	(++)	Significant Presence	Carbohydrates
Benedict's Test	(++)	Significant Presence	Reducing Sugars
Fehling's Test	(+)	Trace Presence	Reducing Sugars
Lead Acetate Test	(+)	Trace Presence	Flavonoids
Alkaline Reagent Test	(+)	Trace Presence	Flavonoids
Ferric Chloride Test	(+)	Trace Presence	Phenolic Compounds
Froth Test	(+)	Trace Presence	Saponins
Gelatin Test	(-)	Absence	Tannins
Filter Paper Test	(-)	Absence	Volatile Oils

Note: A "+" indicates the presence of the substances, as demonstrated by a reaction in each extract with the respective solvent, while a "–" signifies the absence of these antioxidant substances.

Table 1 shows the Phytochemical Analysis Report conducted by the Lorma College of Pharmacy, which reflects an array of plant constituents that elicit, singly or in combination, the analgesic activity of the plant sample. Table 1 presents the phytochemical analysis report of the *Origanum vulgare* L. leaf extract. This analysis involved testing for both primary and secondary plant constituents known to have potential therapeutic properties. It can be gleaned from the table that Oregano leaves contain a significant presence of carbohydrates and a trace presence of reducing sugars, flavonoids, polyphenolic compounds, and saponins. These compounds are known to contribute to the analgesic properties of the plant. These plant constituents, in particular, have been suggested to possess analgesic activity, which might work through the modulation of pain pathways in the body. The presence of carbohydrates, flavonoids, polyphenolic compounds, and saponins further support the potential of Oregano leaf extract as an effective analgesic agent.

This study evaluated the analgesic effects of Oregano (*Origanum vulgare* L.) leaf extract in a rat model, focusing on its phytochemical constituents and concentration-dependent effects. Carbohydrates in medicinal plants have shown potential as analgesic agents, demonstrating their involvement in pain modulation. For example, the methanol extract of *Syzygium reticulatum*, which contains carbohydrates, demonstrated significant analgesic activity in acetic acid-induced writhing and hot plate tests (Das et al., 2024). This suggests that carbohydrates, along with other compounds, may contribute to the plant's pain-relieving effects. Similarly, the hydro-methanolic extract of *Cucurbita moschata* flowers, rich in carbohydrates, exhibited dose-dependent analgesic effects in animal models (Hossain et al., 2023).

Furthermore, according to Bilal et al. (2023), the presence of carbohydrates, alongside other active compounds, may contribute to these observed effects, supporting the traditional use of *Iris albicans* in pain management. Similarly, *Sesuvium sesuvioides*, a plant traditionally used to treat inflammatory conditions, has demonstrated potent analgesic effects in various animal models. The phytochemical analysis of *Sesuvium sesuvioides* confirmed the presence of carbohydrates in addition to phenols, flavonoids, and saponins (Sajid-ur-Rehman et al., 2021). Furthermore, *Gomphandra tetrandra* (Wall.) Sleumer, a plant from the family Stemonuraceae, has been found to contain carbohydrates among other compounds like steroids, flavonoids, and phytosterols. In an in vivo evaluation of its methanolic extract, the plant demonstrated significant analgesic activity in the acetic acid-induced writhing test (Bhuiya et al., 2022). Additionally, *Fumaria indica*, a medicinal herb used in traditional systems like Unani and Ayurvedic medicine (Chishti et al., 2024), and *Felicia abyssinica*, a member of the Asteraceae family, traditionally used for its analgesic properties (Elshorbagy et al., 2024), *Paederia foetida* Linn., belonging to the Rubiaceae family (Karmakar et al., 2020), and *Selaginella bryopteris* (Paswan et al., 2021) contain carbohydrates, alkaloids, flavonoids, and other bioactive compounds. These studies collectively underscore the significance of carbohydrates in enhancing the analgesic properties of medicinal plants. Carbohydrates, in combination with other active compounds such as flavonoids, alkaloids, and terpenoids, play a crucial role in the analgesic and anti-inflammatory effects. This highlights the therapeutic potential of Oregano as it also contains the phytochemical constituents present in these plants that contributed to their analgesic activity and suggests that carbohydrates are key contributors to their

pharmacological efficacy, thus underscoring the diverse pharmacological potentials of carbohydrates within its complex phytochemical profile.

Polyphenols, especially flavonoids, are known for their analgesic and anti-inflammatory properties, contributing to pain reduction by mitigating oxidative stress and inflammatory responses. Flavonoids, in particular, have been extensively studied for their ability to modulate nociceptive signaling and inhibit inflammatory cytokines. For example, hesperidin methyl chalcone (HMC), a flavonoid, has demonstrated significant analgesic effects by reducing inflammation, oxidative stress, and nociceptive behavior in various models (Artero et al., 2023). Similarly, the polyphenolic compounds in Oregano may exert their analgesic effects by modulating inflammatory pathways and oxidative stress, as observed with higher concentrations of the extract in this study. In a related study, Mazumder et al. (2022) reported that *Crotalaria calycina* stem extract, derived from a plant rich in polyphenols like epicatechin, demonstrated significant analgesic activity through the inhibition of pain responses in writhing, licking, and hot plate assays. The analgesic potential of polyphenolic compounds is further supported by Ali et al. (2021), who found that *Nepeta adenophyta* extract exhibited potent analgesic and anti-inflammatory effects in various pain models. Likewise, Chatterjee et al. (2022) observed that *Cyperus tegetum* rhizome extract demonstrated significant analgesic and anti-inflammatory activity, highlighting the therapeutic potential of polyphenols in pain relief. Furthermore, oleocanthal (OC), a polyphenolic compound found in extra virgin olive oil, has shown potent anti-inflammatory and antioxidant effects, particularly inhibiting prostaglandin-induced uterine hypercontraction, a key mechanism in dysmenorrhea (Chiang et al., 2020). Additionally, Simão et al. (2024) demonstrated that *Croton*

antisyphiliticus root extract, rich in polyphenolic compounds, exhibited dose-dependent analgesic and anti-inflammatory effects, reducing pain induced by formalin and hyperalgesia, as well as reducing paw edema and myeloperoxidase activity. Other plants such as the Himalayan medicinal plant *Ajuga bracteosa* (Rubnawaz et al., 2021), the West Tropical African plant *Sida linifolia L.* (Ezeako et al., 2023), the medicinal tree species *Lygodium lanceolatum* (Razafin-drabazo, 2020), and the *Dicranopteris linearis* leaf (Zakaria et al., 2020) have demonstrated significant therapeutic potential for pain, largely due to the polyphenolic compounds present in these plants. These findings suggest that Oregano, with its rich polyphenolic content, could serve as a natural source of analgesic agents, similar to synthetic alternatives, with potentially fewer side effects.

Saponins are known to have analgesic activity due to their ability to modulate inflammatory and nociceptive pathways, influencing pain perception by modulating central and peripheral nervous system pathways. Studies on *Fagonia bruguieri* (Irshad et al., 2022) and *Paris polyphylla* (Man et al., 2024) demonstrated that saponins could reduce inflammation and pain by acting on specific molecular targets and enhancing synaptic responses. These findings are consistent with Tan et al. (2022), who highlighted the role of saponins in neuropathic pain, suggesting their potential to serve as an alternative or complementary treatment for pain conditions that are difficult to manage with conventional drugs. This supports the broader evidence that saponins from various plants can alleviate pain by inhibiting inflammation and pain signaling, positioning them as promising natural analgesics. In addition, research on *Justicia adhatoda* L. has shown that the leaf extract, rich in saponins, exhibited significant anti-inflammatory, analgesic, and antioxidant effects (Basit et al., 2022).

Phytochemical screening of the extract revealed the presence of saponins, further supporting the role of saponins in managing pain and inflammation. Moreover, research on triterpenoid saponins from *Stauntonia chinensis* revealed their ability to enhance inhibitory synaptic responses and antagonize the capsaicin receptor, producing both central and peripheral analgesic effects (Gong et al., 2023). Other plants which have been revealed to contain saponins such as *Syzygium reticulatum* (Das et al., 2024), *Dioscorea deltoidea* (Ali et al., 2020)*, Artocarpus hirsutus Lam* (Karthik et a., 2022), *Eruca vesicaria* (Sihem et al., 2022), *P. guajava* (Prajapati, Patel & Murkerjee, 2020), and *Gomphocarpus purpurascens* (Ayanaw, Yesuf, & Birru, 2023) have been shown to exhibit significant analgesic effects, with its methanol extract demonstrating notable analgesic activity in acetic acid-induced writhing and hot plate, and paw edema tests in an animal model, suggesting its potential for pain management. These findings underscore the potential of plant-derived saponins as effective natural remedies for pain relief.

Studies have highlighted the potential of essential oils extracted from plants for their anti-inflammatory, analgesic, and antipyretic properties. For example, the essential oil of *Eugenia supra-axillaris* demonstrated significant inflammation inhibition and pain relief in carrageenan-induced rats (Abdelhameed et al., 2023). Similarly, *Brocchia cinerea* essential oil showed notable analgesic activity, with a high pain inhibition percentage, and accelerated wound healing through topical application (Lakache et al., 2023). *Pelargonium peltatum* essential oil, containing compounds like camphene and α-terpineol, also exhibited both analgesic and anti-inflammatory effects, reducing paw edema and increasing pain latency (Rungqu et al., 2023).

Furthermore, *Lavandula angustifolia* essential oil was found to enhance the percutaneous absorption of naproxen, significantly improving its analgesic effects (Rostamkalaei et al., 2023). The essential oils of *Cinnamomum camphora* leaves (Fan et al., 2020) and *Saussurea lappa* Clarke (Compositae) (Abdelwahad et al., 2021) also demonstrated analgesic effects in a mouse model induced by nitroglycerin, where it reduced head scratching and decreased levels of nitric oxide and inflammatory markers, indicating its potential for managing migraine pain and exhibited dose- and time-dependent analgesic effects in Sprague Dawley rats, showing promise as a novel analgesic agent due to its interaction with opioid receptors and peripheral analgesia mechanisms, respectively. These studies support the potential of essential oils as effective, natural alternatives to synthetic drugs, highlighting their promising role in the management of inflammation and pain. These findings are consistent with the observed analgesic activity of Oregano leaf extract in this study, reinforcing the value of plant-based extracts in addressing pain and inflammation.

Reducing sugars is known for its antioxidant and anti-inflammatory properties, which can contribute to pain relief. These sugars may modulate pain pathways by inhibiting the production of pro-inflammatory mediators such as cytokines and prostaglandins. Studies on plant extracts, such as that from *Himatanthus drasticus* (de Moura et al., 2020) have highlighted the role of reducing sugars in analgesic and anti-inflammatory activities. These compounds may help reduce oxidative stress, a common factor in pain and inflammation, thus providing potential relief from pain. *Himatanthus drasticus*, endemic to Brazil, has been traditionally used for its analgesic and anti-inflammatory properties. The latex of the plant contains bioactive

compounds such as saponins, reducing sugars, and terpenes. Similarly, *Ziziphus lotus*, a widely distributed medicinal plant in arid regions, also contains reducing sugars that aid in its antioxidant and analgesic properties, offering evidence of its therapeutic potential and reinforcing its significance in herbal medicine (Cadi et al., 2020). *Ocimum basilicum*, commonly known as basil, has been extensively studied for its antimicrobial, anti-inflammatory, and antidiabetic properties. Phytochemical analyses reveal the presence of terpenoids, phenolics, tannins, and flavonoids, as well as essential nutrients such as proteins and vitamins. The plant's broad pharmacological spectrum suggests its potential application in disease management and functional food development (Al-Snafi, 2021). Furthermore, plants like *Caesalpinia crista* (Soghi et al., 2023), commonly found in India and used for its antipyretic, antidiabetic, and anti-inflammatory properties, and *Mondia whitei* (Deeh et al., 2024), native to sub-Saharan Africa and is notable for its antibacterial and anti-inflammatory potential, are also rich in bioactive compounds such as flavonoids, alkaloids, and terpenoids, which enhance their analgesic and anti-inflammatory effects. The combination of these compounds can lead to stronger, synergistic analgesic properties. These studies emphasize the potential of reducing sugars and other plant-based compounds in developing safer, more effective natural analgesics. Their rich phytochemical profiles support their traditional use, while pharmacological studies provide scientific validation of their medicinal benefits.

The presence of these phytochemical constituents provides a scientific basis for the observed analgesic activity of Oregano leaf extract and reinforces its traditional use in pain management. Carbohydrates, polyphenols (especially flavonoids),

saponins, essential oils, and reducing sugars are key contributors to the analgesic effects of various medicinal plants. These compounds work together to reduce pain through anti-inflammatory, antioxidant, and pain-modulating mechanisms. Oregano (*Origanum vulgare* L.), rich in these bioactive compounds, shows significant potential as a natural analgesic. Carbohydrates help modulate inflammation, flavonoids like hesperidin methyl chalcone reduce oxidative stress and inflammation, and saponins modulate nociceptive pathways. Additionally, reducing sugars further contributes by alleviating oxidative stress and reducing inflammatory markers. Together, these compounds, including essential oils, work in concert to amplify Oregano's pain-relieving properties, making it a promising natural alternative to commercial analgesics.

Furthermore, the analgesic activity of Oregano leaves was determined through the Plantar Test (Hargreaves Method,) which involves exposing the plantar surface of the rodent's paw to a heat source, thus eliciting a thermal response. The withdrawal latency time—the time it takes for the animal to withdraw its paw— is recorded in seconds.

Table 2. Mean Withdrawal Latency Time for Different Concentrations of Oregano Leaf Extract

Treatment	Trial 1 (seconds)	Trial 2 (seconds)	Trial 3 (seconds)	Mean (seconds)
(-) control	3.7	3.4	3.8	3.63
25%	3.9	4.3	4.1	4.10
50%	5.4	5.8	5.5	5.57
75%	10.7	10.1	9.6	10.13
(+) control	12.3	11.9	11.6	11.93

Table 2 displays the mean withdrawal latency times for the different extract concentrations and shows the recorded time (in seconds) of the withdrawal latency of the test animals when exposed to a heat source. The withdrawal latency time is a crucial measure of analgesic activity as it reflects the test animals' ability to tolerate thermal stimuli following extract administration. The data indicates that the 25% concentration of Oregano leaf extract, when administered to the test animals, has a recorded mean withdrawal latency time of 4.10 seconds. Likewise, the 50% concentration showed a mean time of 5.57 seconds, and the 75% concentration demonstrated a mean time of 10.13 seconds. The positive control had the highest withdrawal latency time of 11.93 seconds, whereas the negative control had the lowest at 3.63 seconds. *(See Appendix L for the raw data.)*

The results indicate a dose-dependent relationship between the concentration of the Oregano leaf extract and analgesic activity. The findings show that increasing the concentration enhances the extract's analgesic activity. The efficacy of the Oregano leaf extract as an analgesic is evidenced by the increase in withdrawal latency time with increasing concentration. Among the three concentrations, the 25% concentration exhibited the least recorded reaction time, followed by the 50% concentration, and finally, the 75% concentration. This suggests a direct relationship between the concentration of Oregano leaf extract and the analgesic activity: As the concentration increases, the withdrawal latency time also increases, indicating greater effectiveness in pain relief. Therefore, the 75% concentration is the most effective analgesic among the test groups, yet it is not superior to the standard drug used as a positive control.

This dose-effect relationship plays a crucial role in determining the efficacy of various analgesic agents. For instance, Karm et al. (2023) explored that the pain-relieving effect was dose-dependent, with higher doses resulting in significant reductions in thermal and cold hyperalgesia. Similarly, the results of a study by Bai et al. (2022) demonstrated that the scorpion neurotoxin alleviated pain in a dose-dependent manner. Hossain et al. (2023) demonstrated that *Cucurbita moschata* flower extract also produced dose-dependent analgesia, with higher doses providing stronger pain relief, alongside anti-inflammatory and antibacterial properties. These studies highlight the importance of dose optimization for effective analgesic treatments. These studies collectively underscore the importance of dose-dependent mechanisms in the development of effective analgesic treatments, emphasizing that optimal dosing is key to achieving sustained and effective pain relief.

Table 3. ANOVA Results for Withdrawal Latency Times of Across Extract Concentrations

Source	***SS***	***df***	***MS***	***F***	***p-value***
Between Group	167.783	4	41.9457	379.03	0.0000000000721
Within Group	1.107	10	0.1107	-	-
Total	168.889	14		-	-

Table 3 presents the results of the one-way analysis of variance (ANOVA), which assesses how different concentrations of Oregano leaf extract affect the pain response in Sprague Dawley rats by comparing the withdrawal latency times across groups treated with varying concentrations (25%, 50%, and 75%). The results of ANOVA yielded an F-value of 379.03 and a p-value of 7.21E-11, indicating statistical

significance ($p < 0.05$). The ANOVA results indicate a significant difference between the groups, as the p-value (7.21E-11 or 0.0000000000721) is much smaller than the threshold of 0.05. Thus, the Oregano leaf extract has an analgesic effect, as seen in the pain response of the animals.

The statistically significant difference suggests that at least one of the Oregano extract concentrations produced a withdrawal latency time that significantly differed from the others. This supports that Oregano leaf extract exhibits analgesic activity, and that its effect varies with its concentration.

Table 4. Results of Tukey's Test for Multiple Comparisons of Means Across Concentrations

Treatment	t-value	Interpretation	Decision
(-) control vs 25%	1.72	Not Significant	Accept H_0
(-) control vs 50%	7.12	Significant	Reject H_0
(-) control vs 75%	23.93	Significant	Reject H_0
(-) control vs (+) control	30.56	Significant	Reject H_0
25% vs 50%	5.40	Significant	Reject H_0
25% vs 75%	22.21	Significant	Reject H_0
25% vs (+) control	28.84	Significant	Reject H_0
50% vs 75%	16.81	Significant	Reject H_0
50% vs (+) control	23.44	Significant	Reject H_0
75% vs (+) control	6.63	Significant	Reject H_0

Table 4 presents the results of Tukey's Test as a post hoc analysis. This was performed to find where the significant differences lay between specific pairs of concentrations and treatment groups. The results of this test revealed the following:

The 25% concentration differs significantly from the 50% and 75% concentrations, showing that the lowest concentration has the least analgesic property. In addition, the 50% concentration shows a significant difference from the 25% concentration but also differs significantly from the 75% concentration, suggesting that the 75% concentration provides a substantially stronger analgesic effect than the 50% concentration. The 75% concentration was significantly more effective than both the 25% and 50% concentrations, demonstrating significant analgesic activity, thus proving that higher concentrations of Oregano leaf extract have stronger analgesic properties. The negative control group had significantly lower withdrawal latency times compared to all Oregano concentrations, confirming that the analgesic effect observed in treated groups was due to the extract. The positive control group had significantly higher withdrawal latency times, with a mean of 11.93, than all the Oregano extract concentrations, which establishes that among the three concentrations, the 75% concentration has the highest analgesic activity, yet it is not superior to the standard drug used as a positive control, thus the null hypothesis is rejected.

In closing, the results obtained from both the ANOVA and Tukey's test indicate a significant, concentration-dependent analgesic effect of Oregano (*Origanum vulgare* L.) leaf extract, as anticipated based on prior research and logical reasoning. As the concentration of Oregano extract increased, there was a corresponding increase in the withdrawal latency time, suggesting stronger analgesic effects. Notably, the 75% concentration of Oregano leaf extract was found to be the most effective in inducing pain relief, as evidenced by the highest increase in withdrawal latency times. This was further validated by statistical analysis, which showed significant differences between

the various concentrations, aligning with the hypothesis that the 75% concentration would yield the most substantial analgesic activity.

These findings support the hypothesis that the 75% concentration would exhibit the most potent analgesic properties. Moreover, the study suggests that higher concentrations of Oregano leaf extract may be especially promising as a natural alternative for pain management, particularly when administered at higher concentrations.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of the key findings from the data collection and analysis conducted in this study. The conclusions were drawn based on the results and supported by logical reasoning. Additionally, a set of recommendations is provided to guide future improvements and identify areas for further research. This study focused on investigating the analgesic properties of Oregano (Origanum vulgare L.) leaf extract, examining its effectiveness as a natural pain relief agent at varying concentrations. The insights gained contribute to a deeper understanding of its potential efficacy and underlying mechanisms in pain management, adding to the growing body of research on natural remedies.

Summary of Findings

The findings of the study, meticulously derived from comprehensive analysis and data collection, are outlined below, providing a precise understanding of the effects of Oregano (*Origanum vulgare* L.*)* leaf extract on pain models.

1. The phytochemical report confirmed that Oregano leaves exhibit a significant presence of carbohydrates, along with trace amounts of reducing sugars, flavonoids, polyphenolic compounds, and saponins.
2. The average withdrawal latency times (in seconds) of the test animals when exposed to heat were as follows: the 25% concentration of Oregano leaf extract resulted in a mean withdrawal latency time of 4.10 seconds. The 50% concentration produced a mean time of 5.57 seconds, while the 75% concentration exhibited the most analgesic activity by demonstrating a mean latency of 10.13 seconds.

3. Tukey's post hoc test showed significant differences between the concentrations of Oregano leaf extract. The 25% concentration was notably less effective than both the 50% and 75% concentrations. The 50% concentration also showed a significant difference from the 75% concentration. The 75% concentration was the most effective among the Oregano concentrations, though it was still less effective than the positive control group, which had the highest withdrawal latency time (11.93 seconds). These findings indicate that while higher concentrations of Oregano leaf extract produce stronger analgesic effects, they are not as potent as the standard drug used in the positive control.

Conclusions

Drawing upon the aforementioned findings, the following conclusions were reached:

1. The presence of key plant constituents in the Oregano leaf extract, including carbohydrates, flavonoids, and polyphenolic compounds, plays a significant role in supporting its analgesic activity. These compounds are known to have therapeutic properties that contribute to the plant's ability to alleviate pain. Specifically, they are believed to influence various pain pathways in the body, such as modulating inflammatory responses and interacting with neurotransmitter systems. This indicates that these active constituents work to produce the analgesic effects observed with Oregano leaf extract, enhancing its potential as a natural pain relief agent.

2. The results obtained from both the ANOVA and Tukey's test indicate a significant, concentration-dependent analgesic effect of Oregano (*Origanum vulgare* L.) leaf extract, as anticipated based on prior research and logical reasoning. As the concentration of Oregano extract increased, there was a corresponding increase in the withdrawal latency time, suggesting stronger analgesic effects. The recorded data demonstrates the analgesic effect of Oregano leaf extract, with increasing concentrations leading to longer withdrawal latency times in response to thermal stimulation. The 25% concentration differed significantly from the 50% and 75% concentrations, suggesting that the lowest concentration had the weakest analgesic effect, with stronger effects observed at higher concentrations. At the 25% concentration, the mean withdrawal latency was 4.10 seconds. The 50% concentration showed a significant difference from both the 25% and 75% concentrations, suggesting that the 75% concentration provided a much stronger analgesic effect compared to the 50% concentration. At the 50% concentration, the mean latency increased to 5.57 seconds. The 75% concentration was significantly more effective than both the 25% and 50% concentrations, confirming that higher concentrations of Oregano leaf extract provide stronger analgesic properties. The most pronounced effect was observed at the 75% concentration, with a mean latency time of 10.13 seconds, which was significantly longer than the lower concentrations.
3. This study concludes that the concentration of Oregano leaf extract significantly affects its analgesic properties, with higher concentrations providing stronger pain relief. The trend—25% < 50% < 75%— indicates that

the analgesic effect of Oregano leaf extract becomes more potent with higher concentrations, with the 75% concentration producing the strongest response among the *Origanum vulgare* L. extracts but was not superior to the standard drug used as the positive control. Since the p-value of 7.21E-11 is less than 0.05, it is established that Oregano leaf extract has analgesic activity and cements its therapeutic uses in a medical setting. The F-value of 379.03 further supports that the differences in pain relief between concentrations are significant, with higher concentrations offering more effective pain relief.

Recommendations

The researchers acknowledge that despite the findings of the study, considerable gaps may have existed in their understanding of the analgesic activity of the Oregano *(Origanum vulgare* L.*)* leaf extract. Therefore, to further enhance the study, the following recommendations are presented:

Consumers. It is advised to consider herbal alternatives such as Oregano leaf extract for mild pain relief with caution. While early findings suggest potential analgesic effects, its safety and optimal dosage are not yet fully established. Individuals interested in using this extract should consult with healthcare professionals before incorporating it into their routine, especially to avoid possible adverse reactions or interactions with other medications.

***Medical Laboratories*.** Medical laboratories play a vital role in understanding how substances interact with biological systems, particularly in relation to physiological responses like pain. It is recommended that these laboratories further explore the analgesic potential of Oregano (Origanum vulgare L.) leaf extract by examining its effects on pain signaling pathways and thresholds. This includes but is

not limited to identifying the specific molecular interactions involved in pain modulation. In-depth studies on neurotransmitter activity, inflammatory mediators, and receptor binding (such as to opioid or cannabinoid receptors) are essential to determine how the extract alters the perception or transmission of pain. Additionally, laboratories should assess both acute and long-term exposure to the extract to establish its safety and any neurophysiological side effects. Through such research, medical laboratories can contribute significantly to validating natural alternatives for pain relief and expanding the scientific understanding of pain mechanisms.

Pharmacists. Pharmacists should remain updated on the growing body of research regarding herbal analgesics, particularly Oregano leaf extract. As demand for natural remedies increases, pharmacists can play a key role in guiding consumers by providing evidence-based advice on appropriate use, potential risks, and possible interactions with conventional medications. Understanding the scientific developments surrounding such natural alternatives can enable pharmacists to responsibly support patients seeking complementary pain management strategies.

Anesthesiologists. Anesthesiologists are encouraged to consider the potential of natural analgesics like Oregano leaf extract as part of an integrative approach to pain management, particularly for patients inclined toward herbal, non-synthetic, or alternative options. Although not a replacement for clinical anesthetics, Oregano extract may offer supportive benefits. Evaluating its onset, duration, and effectiveness—especially in comparison to standard analgesics such as paracetamol—could provide valuable insights into its possible applications in practice, once supported by more comprehensive research.

Future Researchers. The researchers recommend assessing the analgesic activity of a 100% concentration of Oregano (*Origanum vulgare* L.) leaf extract to determine whether higher concentrations can produce more potent pain relief, as this would provide valuable insights into its efficacy and potential as an alternative pain management option. To support the safe and effective use of the extract, additional studies are needed to examine its long-term safety and efficacy, including both acute and chronic toxicity tests. Further research is also necessary to uncover the mechanisms underlying its analgesic effects. Exploring different formulations and dosages could help optimize its use; while this study utilized a dose of 12.5 mg/kg administered orally, testing other dosage levels and routes—such as topical or transdermal applications—could reveal more effective methods of delivery. Future studies should also consider evaluating the extract's analgesic activity at various time intervals post-administration, such as at 10, 20, and 30 minutes or longer, to better understand the onset, peak, and duration of its pain-relieving effects. It is also important to evaluate the time-dependent analgesic effects of the extract since the current study used 30 minutes as the standard time of efficacy for paracetamol, which could provide a point of comparison for understanding the extract's effectiveness over time. In terms of preparation, researchers are advised to experiment with alternative extraction methods like rotary evaporation, as well as different solvents, to determine which combinations yield the most potent and consistent results. Exploring the impact of different extraction methods could also optimize the concentration and formulation of the extract for maximum efficacy. Future researchers are encouraged to isolate the constituents of Oregano (*Origanum vulgare L.)* in order to identify a pure active constituent with a potentially stronger analgesic effect. It may also be beneficial

to pain research to investigate the effects of different concentrations of Oregano leaf extract in combination with other compounds, which could enhance its analgesic properties. Lastly, to enhance the reliability and generalizability of the findings, future studies should be conducted with a larger population of test animals and with the intent to evaluate which population subsets can tolerate the extract without adverse effects.

By addressing these recommendations, future studies might provide a more comprehensive understanding of the potential of Oregano leaf extract as a natural analgesic, furthering its application in pain management.

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A P P E N D I C E S

Appendix A: Communication Letter for the Utilization of the Lorma Animal Labouratory and Pharmacy Laboratory

LORMA
COLLEGES

BASIC EDUCATION SCHOOLS
Urbiztondo, San Juan, La Union
Academic Year 2024 - 2025

October 19, 2024

MRS.ELLEN MAE P. ABIQUI, RPh, MSPharm, CPT©
Dean, College of Pharmacy
Academic Executive Director, Campus for Health Sciences
Carlatan, City of San Fernando, La Union

Dear Ma'am Abiqui,

Greetings with a Lorma Smile!

The undersigned are Grade 12 STEM - Health Allied Strand (STEM-HAS) students of Lorma Colleges Basic Education Schools - Senior High School Department who are currently working on a research entitled "The Analgesic Activity of Oregano (*Origanum vulgare*) Leaf Extract on Albino Rats". The said study aims to determine and evaluate the analgesic activity of Oregano (*Origanum vulgare*) formulated as an extract.

In line with this, the researchers would like to request the utilization of the Lorma Animal House for the housing of the rats during the acclimatization period of 2 weeks and the use of the Pharmacy Laboratory (S3-501/502) for laboratory help and technical assistance, including the use of the necessary laboratory equipment and apparatus such as the Soxhlet Apparatus for extraction and the Plantar Apparatus as the chosen method to establish analgesic activity. The undersigned are positive that your department would provide the necessary laboratory help for the accomplishment of the research.

The undersigned are open to inquiries regarding this request. Kindly contact them through this contact information: chermagneyrrah.abiqui@lorma.edu or 09602878483.

Thank you for your time, and we look forward to hearing from you.

Respectfully,

Chermagne Yrrah P. Abiqui
Student Researcher

Ace Jhuniel V. Manzo
Student Researcher

Mikaela Kathryn C. Solivio
Student Researcher

Andrei Jullian C. Tapon
Student Researcher

Recommending Approval:

Mr. Rey Mark A. Almarez, LPT
Research Adviser

RECEIVED :

ELLEN MAE P. ABIQUI, RPh, MSPharm, CPT
Dean, College of Pharmacy
Director, Center for Health Sciences
19 Oct 2024

Appendix B: Sample Data Collection Sheet

LORMA COLLEGES

Test Group	Rat #	Weight (g)	Dosage (mg/kg)	Reaction Time (s)
25% Test Group	Rat 1			
	Rat 2			
	Rat 3			
50% Test Group	Rat 1			
	Rat 2			
	Rat 3			
75% Test Group	Rat 1			
	Rat 2			
	Rat 3			
Positive Control	Rat 1			
	Rat 2			
	Rat 3			
Negative Control	Rat 1			
	Rat 2			
	Rat 3			

Appendix C

Communication Letter for Plant Authentication

LORMA
COLLEGES

BASIC EDUCATION SCHOOLS
Urbiztondo, San Juan, La Union
Academic Year 2024 - 2025

RECEIVED
NLUC-RECORDS
FO1-377
DATE: 09/25/2024

September 23, 2024

DR. JUNIFER REY E. TABAFUNDA, Ph.D.
Chancellor
Don Mariano Marcos Memorial State University
Sapilang, Bacnotan, La Union

DMMMSU - NLUC
CAFF
RECEIVED
DATE: 9/24/24
BY:

Thru: **FOR. JAY MARK G. CORTADO, M.Sc.**
Dean, College of Agroforestry and Forestry

Dear Chancellor Tabafunda,

Greetings with a Lorma Smile!

The undersigned are Grade 12 STEM - Health Allied Strand (STEM-HAS) students of Lorma Colleges Basic Education Schools - Senior High School Department who are currently working on a research entitled "The Analgesic Activity of Oregano (*Origanum vulgare*) Leaf Extract on Albino Rats". The said study aims to determine and evaluate the analgesic activity of Oregano (*Origanum vulgare*) formulated as an extract.

In line with this, your assistance in identifying and certifying the plant samples of *Origanum vulgare* leaves will be greatly appreciated. The undersigned are positive that your institution would provide the necessary laboratory help for the accomplishment of the research.

The undersigned are open to inquiries regarding this request. Kindly contact them through this contact information: chermagneyrrah.abiqui@lorma.edu or 09602878483.

Thank you for your time, and we look forward to hearing from you.

Sincerely,

09.23.24.
Chermagne Yrrah P. Abiqui
Student Researcher

Mikaela Kathryn C. Solivio
Student Researcher

Ace Jhuniel V. Manzo
Student Researcher

Andrei Jullian C. Tapon
Student Researcher

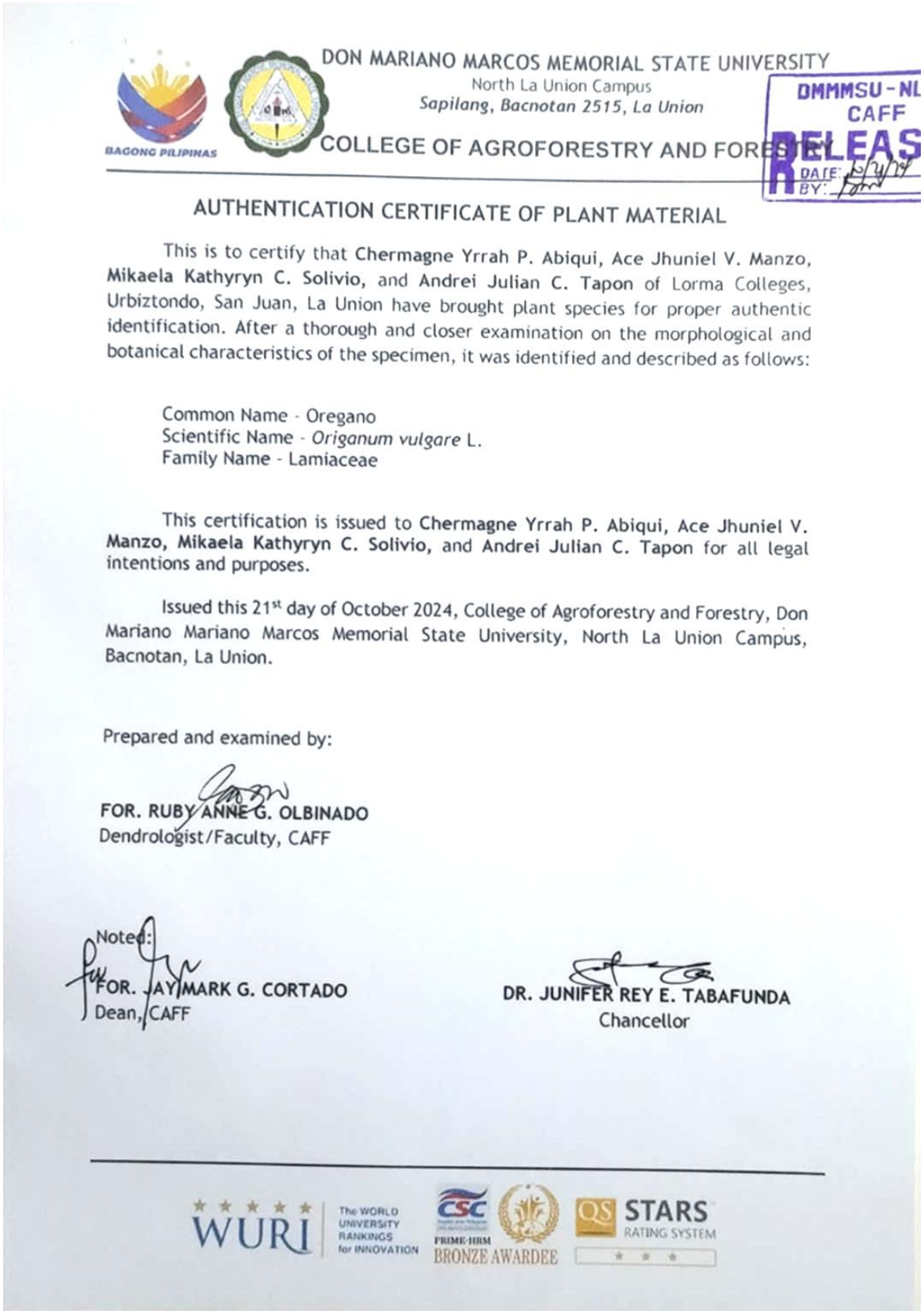
Recommending Approval:

Mr. Rey Mark A. Almarez, LPT
Research Adviser

Approved by:

Mrs. Elizabeth R. Camara, MAEd
Director, Lorma Colleges - Basic Education Schools

Appendix D: Certificate of Plant Authentication



DON MARIANO MARCOS MEMORIAL STATE UNIVERSITY
North La Union Campus
Sapilang, Bacnotan 2515, La Union
COLLEGE OF AGROFORESTRY AND FORESTRY

BAGONG PILIPINAS

DMMMSU - NL
CAFF
RELEAS
DATE:
BY:

AUTHENTICATION CERTIFICATE OF PLANT MATERIAL

This is to certify that **Chermagne Yrrah P. Abiqui, Ace Jhuniel V. Manzo, Mikaela Kathyryn C. Solivio,** and **Andrei Julian C. Tapon** of Lorma Colleges, Urbiztondo, San Juan, La Union have brought plant species for proper authentic identification. After a thorough and closer examination on the morphological and botanical characteristics of the specimen, it was identified and described as follows:

Common Name - Oregano
Scientific Name - *Origanum vulgare* L.
Family Name - Lamiaceae

This certification is issued to **Chermagne Yrrah P. Abiqui, Ace Jhuniel V. Manzo, Mikaela Kathyryn C. Solivio,** and **Andrei Julian C. Tapon** for all legal intentions and purposes.

Issued this 21st day of October 2024, College of Agroforestry and Forestry, Don Mariano Mariano Marcos Memorial State University, North La Union Campus, Bacnotan, La Union.

Prepared and examined by:

FOR. RUBY ANNE G. OLBINADO
Dendrologist/Faculty, CAFF

Noted:

FOR. JAY MARK G. CORTADO
Dean, CAFF

DR. JUNIFER REY E. TABAFUNDA
Chancellor

WURI The WORLD UNIVERSITY RANKINGS for INNOVATION
CSC PRIME-HRM BRONZE AWARDEE
QS STARS RATING SYSTEM

Appendix E: Communication Letter for Phytochemical Screening

LORMA
COLLEGES

BASIC EDUCATION SCHOOLS
Urbiztondo, San Juan, La Union
Academic Year 2024 - 2025

September 15, 2024

ELLEN MAE P. ABIQUI, RPh, MSPharm, CPT©
Dean, College of Pharmacy
Academic Executive Director, Campus for Health Sciences
Carlatan, City of San Fernando, La Union

Dear Ma'am Abiqui,

Greetings with a Lorma Smile!

The undersigned are Grade 12 STEM–Health Allied Strand (STEM–HAS) students of Lorma Colleges Basic Education Schools - Senior High School Department who are currently working on a research paper entitled "**The Analgesic Activity of Oregano (*Origanum vulgare*) Leaf Extract on Albino Rats**". The said study aims to determine and evaluate the analgesic activity of Oregano (*Origanum vulgare*) extract.

In line with this, the researchers would like to request your assistance in conducting the phytochemical screening of *Origanum vulgare L.* leaves through ethanolic extraction. This stage of our research requires specialized laboratory equipment and resources available at the Pharmacy Laboratory as we aim to identify the phytochemical constituents present in *Origanum vulgare L.*

The undersigned are open to inquiries regarding this request. Kindly contact them through this contact information: chermagneyrrah.abiqui@lorma.edu or 09602878483.

Thank you for your time, and we look forward to hearing from you.

Respectfully,

Chermagne Yrrah P. Abiqui
Student Researcher

Ace Jhuniel V. Manzo
Student Researcher

Mikaela Kathryn C. Solivio
Student Researcher

Andrei Jullian C. Tapon
Student Researcher

Recommending Approval:

Mr. Rey Mark A. Almarez, LPT
Research Adviser

RECEIVED:

ELLEN MAE P. ABIQUI, RPh, MSPharm, CPT
Dean, College of Pharmacy
Director, Center for Health Sciences
15 Sept 2024

Appendix F: Phytochemical Testing Results

LORMA COLLEGES
Your Pathway to a Brighter Future

COLLEGE OF PHARMACY
Center for Health Sciences
City of San Fernando, La Union
Tel. No. (072) 700 – 2500 local 332
Website: http://lorma.edu

PHYTOCHEMICAL TESTING RESULTS

Plant Sample: **Oregano Leaves**
Method of Extraction: **Maceration with Ethanol**

Physical description of extract:
Color: Yellowish Brown
Odor: Aromatic

Analysis:

Type of Test	Result
Mayer's test	(-)
Hager's test	(-)
Molisch test	(++)
Benedict's test	(++)
Fehling's test	(+)
Lead Acetate test	(+)
Alkaline Reagent Test	(+)
Ferric Chloride test	(+)
Froth test	(+)
Gelatin Test	(-)
Filter Paper test	(-)

Legend: (-) negative; (+) trace amount; (++) positive; (+++) highly positive

Remarks:
The sample contains a *significant* presence of **carbohydrates,** the sample also contains *trace* presence of **reducing sugars, flavonoids, essential oils, polyphenolic compounds and saponins**. However, the sample does *not* contain any **alkaloids, tannins, or fixed oils.**

- Discrepancies to the documented constituents may be due to extraction process, age of sample, environment, among other factors.

Analyzed by:
09/17/24
Jerald B. Macapagal, BS Pharmacy
Laboratory Custodian

Confirmed and certified by:
17 Sept 2024
Ellen Mae P. Abiqui, RPh, MSPharm, CPT©
Dean

Appendix G: Certification of the Pet Shop

Republic of the Philippines
Department of Environment and Natural Resources
ENVIRONMENTAL MANAGEMENT BUREAU
Government Center, Brgy. Sevilla, San Fernando City, La Union
Tel No. (072) 607-3377 Fax No.(072) 700-2449
r1@emb.gov.ph
Visit us at http://www.r1.emb.gov.ph/

IN ACCORDANCE WITH THE REVISED PROCEDURAL MANUAL FOR DENR ADMINISTRATIVE ORDER NO. 30, SERIES OF 2003 OF PRESIDENTIAL DECREE NO. 1586 OR THE PHILIPPINE ENVIRONMENTAL IMPACT STATEMENT SYSTEM (PEISS)

This

CERTIFICATE OF NON-COVERAGE

CNC-OL-R01-2020-02-00194

Issued to

FRANKIE GALICIA SERAFICA

ON

February 13, 2020

For his

FRANKIE PET SHOP
Sitio Agtas, Brgy. San Juan, San Carlos City, Pangasinan, R01

Classified as

CATEGORY D: CLINICS (OUT-PATIENT, HEALTH CENTERS, DENTAL CLINICS)
Including Rural Health Units; X-Ray Clinic, Diagnostic Laboratory, Assay Laboratory

0.01215 Hectare Total/Gross Floor Area

THE ISSUANCE OF THIS CERTIFICATE SHALL NOT EXEMPT THE GRANTEE FROM COMPLIANCE WITH APPLICABLE ENVIRONMENTAL LAWS, RULES AND REGULATIONS INCLUDING THE PERMITTING REQUIREMENTS OF OTHER GOVERNMENT AGENCIES NEITHER CREATE ANY RIGHT NOR BE USED AS AN AUTHORIZATION TO IMPLEMENT THE PROJECT, **YOU MAY PROCEED WITH THE IMPLEMENTATION ONLY AFTER SECURING ALL THE NECESSARY AND RELEVANT PERMITS FROM OTHER PERTINENT GOVERNMENT AGENCIES.**

MOREOVER, ANY EXPANSION AND/OR MODIFICATION OTHER THAN SPECIFIED ABOVE SHALL BE CONSIDERED AS A VIOLATION OF P.D. 1586 (PEISS) AND SHALL BE SUBJECTED TO IMPOSITION OF FINES/PENALTIES AMOUNTING TO PHP 50,000.00.

ENGR. MARIA DORICA NAZ-HIPE, *CESE*
Regional Director

Bank Receipt No.:12760
Amount Paid: Php 1,126.00
Date Paid:1/30/2020
Application Ref No.:c2b2a246-671d-47dc-8b2f-9259225f59d8

Appendix H: Researchers' Certificate of Participation:

Safe Animal Handling and Training

Appendix H: Researchers' Certificate of Participation:

Safe Animal Handling and Training

Appendix I: Application for Animal Research Permit

...iatory Division
...ceived by: Jmacaraeg
Date: 11-05-2024

APPLICATION FOR AUTHORIZATION
(For the Conduct of Scientific Procedures Using Animals)

1. Name of Entity: Lorma Colleges

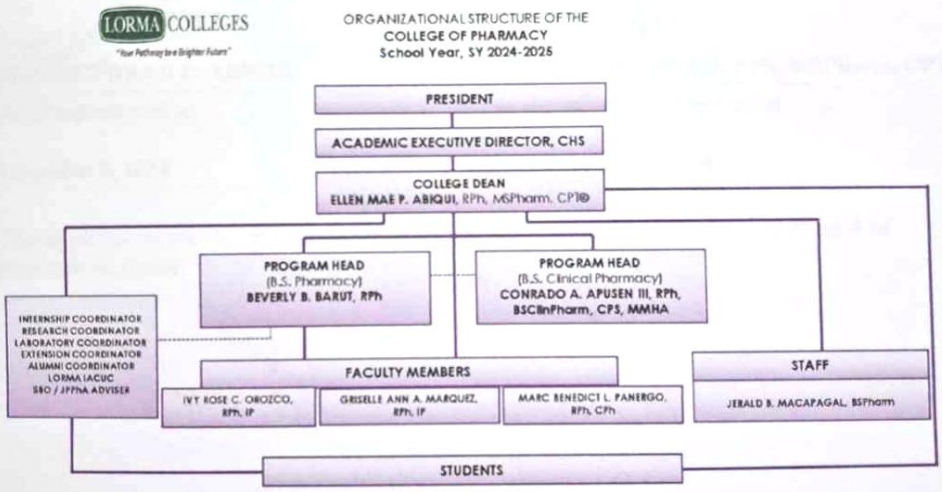
2. Address: Brgy. Carlatan, San Fernando City, La Union

3. Telephone Nos.: 700-2500 Fax Nos.: N/A

4. Name and Position of Representative Person:
Abiqui (Last Name) Chermagne Yrrah (First Name) Posilero (Middle Name)

Position : Research Leader

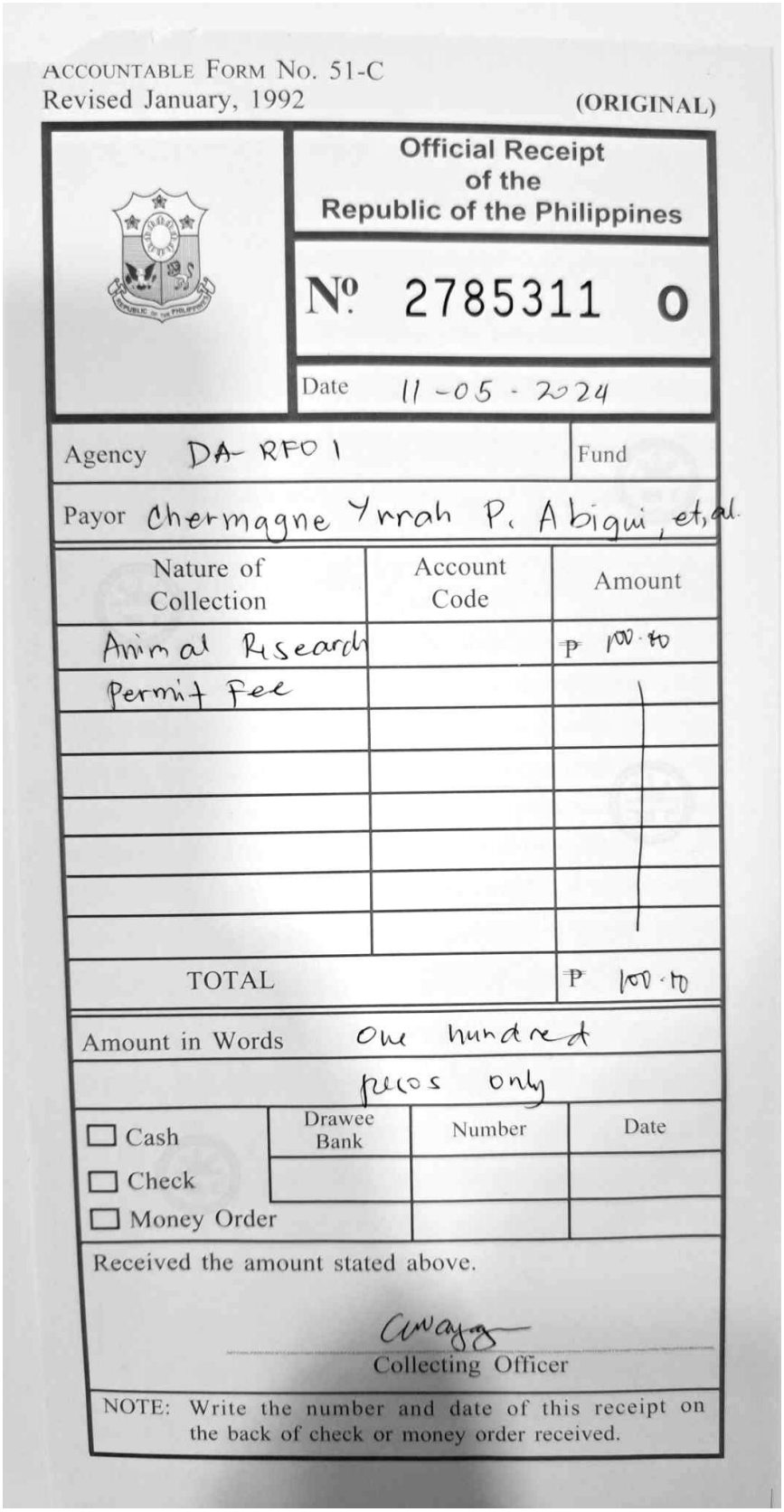
5. Description/Profile of Entity (attach organizational chart):



6. Purposes of the conduct of Scientific Procedures (encircle one or more):

(a.) Biomedical research, experiment, studies, investigation (including preclinical research)
b. Teaching and instruction
c. Product testing
d. Production of antisera or other biologicals

Appendix J: Official Receipt for Research Permit from the Bureau of Animal Industry



ACCOUNTABLE FORM NO. 51-C
Revised January, 1992 (ORIGINAL)

Official Receipt of the Republic of the Philippines

No. 2785311 O

Date 11-05-2024

Agency DA RFO I | Fund

Payor Chermagne Yrrah P. Abigui, et al.

Nature of Collection	Account Code	Amount
Animal Research		₱ 100.00
Permit Fee		
TOTAL		₱ 100.00

Amount in Words One hundred pesos only

	Drawee Bank	Number	Date
☐ Cash			
☐ Check			
☐ Money Order			

Received the amount stated above.

Collecting Officer

NOTE: Write the number and date of this receipt on the back of check or money order received.

Appendix K: Animal Research Permit

Republic of the Philippines
Department of Agriculture
BUREAU OF ANIMAL INDUSTRY
Visayas Avenue, Brgy. Vasra, Quezon City

ANIMAL RESEARCH CLEARANCE

NAME OF INSTITUTION : **LORMA COLLEGES**	**REFERENCE NO :** *AR - 2046 - 0497*
	DATE/VENUE : September 2024 - December 2024 Lorma Colleges
BUSINESS ADDRESS : Carlatan, San Fernando City, La Union	**LEAD RESEARCHER/VETERINARIAN/IACUC CHAIR:** **Chermagne Yrrah P. Abiqui** - Lead Researcher **Rey Mark A. Almarez, LPT** - Research Adviser **Conrado A. Apusen III, RPh** – IACUC Chair

Pursuant to the provisions of Republic Act 8485 or the Animal Welfare Act of 1998 as amended by RA 10631 and DA-Administrative Order (AO) No. 40, series of 1999, on the Rules and Regulations on the Scientific Procedure Using Animals, this Permit is hereby issued to **LORMA COLLEGES** after completing the requirements to conduct the research entitled **"The Analgesic Activity of Oregano (*Origanum vulgare L.)* Leaves Extract on Sprague Dawley Rats`"** on the date and venue stipulated above.

The Institution is hereby reminded to observe the provisions of DA-AO no. 40 s.1999.

Prepared on November 13, 2024

Approved By Authority of the Director

ANTHONY C. BUCAD, DVM
Veterinarian III
Animal Health and Welfare Division
11/13/2024

RF AHWD-49 Animal Research Clearance
Rev. No. 03
April 19, 2023

Appendix L: Raw Data Sheet

LORMA COLLEGES

Test Group	Rat #	Weight (kg)	Dosage(mL) 12.5 mg/kg body weight	Reaction Time (s)
25% Test Group	Rat 1	0.1128	0.03	3.9
	Rat 2	0.1086	0.03	4.3
	Rat 3	0.1104	0.03	4.1
50% Test Group	Rat 1	0.1075	0.03	5.4
	Rat 2	0.1133	0.03	5.8
	Rat 3	0.1168	0.03	5.5
75% Test Group	Rat 1	0.1091	0.03	8.7
	Rat 2	0.1084	0.03	9.2
	Rat 3	0. 1117	0.03	9
Positive Control	Rat 1	0.1089	0.03	12.3
	Rat 2	0.1152	0.03	11.9
	Rat 3	0.1141	0.03	11.6
Negative Control	Rat 1	0.1129	0.03	3.7
	Rat 2	0.1098	0.03	3.4
	Rat 3	0.1072	0.03	3.8

Appendix M: Letter of Communication to LC-REC

LORMA COLLEGES

BASIC EDUCATION SCHOOLS
Urbiztondo, San Juan, La Union
Academic Year 2024 - 2025

November 19, 2024

CHRISTY E. JAVARRO, MASE, PTRP
Chairman, LC-REC
LORMA Colleges
Carlatan, City of San Fernando, La Union

Dear Madam,

Greetings with a Lorma Smile!

We, the undersigned student researchers of LORMA Colleges Senior High School, are writing to express our intent to conduct the study entitled **"THE ANALGESIC ACTIVITY OF OREGANO *(Origanum vulgare* L.*)* LEAF EXTRACT IN SPRAGUE DAWLEY RATS"**. The purpose of this study is to explore the clinical applications of oregano in pain management in order to offer a plant-based alternative to commercial pain medications. By aiming to establish the analgesic activity of oregano extract, this research could contribute to the development of new pain management strategies and viable alternatives to commercial pain relief medications.

The researchers humbly ask your good office for your approval to conduct the study. This research could increase awareness among healthcare professionals and the public about oregano's medicinal benefits, potentially offering innovative approaches for alleviating pain.

Thank you for your time and we humbly look forward to your favorable response.

Respectfully,

Chermagne Yrrah P. Abiqui
Student Researcher

Mikaela Kathryn C. Solivio
Student Researcher

Ace Jhuniel V. Manzo
Student Researcher

Andrei Jullian C. Tapon
Student Researcher

Recommending Approval:

Rey Mark A. Almarez, LPT
Research Adviser

LORMA COLLEGES

Appendix N: Letter of Communication to LC-REC

BASIC EDUCATION SCHOOLS
Urbiztondo, San Juan, La Union
Academic Year 2024 - 2025

November 19, 2024

ARDEE JOY T. OCAMPO, DIT
Chairman, LCRI – CLI
LORMA Colleges
Urbiztondo, San Juan, La Union

Dear Madam,

Greetings with a Lorma Smile!

We, the undersigned student researchers of LORMA Colleges Senior High School, are writing to express our intent to conduct the study entitled **"THE ANALGESIC ACTIVITY OF OREGANO *(Origanum vulgare* L.*)* LEAF EXTRACT IN SPRAGUE DAWLEY RATS"**. The purpose of this study is to explore the clinical applications of oregano in pain management in order to offer a plant-based alternative to commercial pain medications. By aiming to establish the analgesic activity of oregano extract, this research could contribute to the development of new pain management strategies and viable alternatives to commercial pain relief medications.

The researchers humbly ask your good office for your approval to conduct the study. This research could increase awareness among healthcare professionals and the public about oregano's medicinal benefits, potentially offering innovative approaches for alleviating pain.

Thank you for your time and we humbly look forward to your favorable response.

Respectfully,

Chermagne Yrrah P. Abiqui
Student Researcher

Mikaela Kathryn C. Solivio
Student Researcher

Ace Jhuniel V. Manzo
Student Researcher

Andrei Jullian C. Tapon
Student Researcher

Recommending Approval:

Rey Mark A. Almarez, LPT
Research Adviser

LORMA
COLLEGES

Appendix O: Letter of Communication to LC-REC

BASIC EDUCATION SCHOOLS
Urbiztondo, San Juan, La Union
Academic Year 2024 - 2025

November 19, 2024

To the Lorma Colleges Research Ethics Committee:

The Research Technical Panel of the Senior High School has reviewed the study entitled **"THE ANALGESIC ACTIVITY OF OREGANO *(Origanum vulgare* L.*)* LEAF EXTRACT IN SPRAGUE DAWLEY RATS"** prepared and submitted by Chermagne Yrrah P. Abiqui, Ace Jhuniel V. Manzo, Mikaela Kathryn C. Solivio, and Andrei Jullian C. Tapon

The study, therefore, is endorsed to the Lorma College Research Ethics Committee (LC-REC) for further review and approval.

Sincerely yours,

JESSYREE J. TAÑO
Chairperson

KRISTINE MARIE ERIKA C. MANALO
Panel Member

MARY JOYCE M. BAD-EY
Panel Member

RAPHAELLA ERICKA J. CONCEPCION
Panel Member

GENOA P. SABADO
Panel Member

REXON A. CHAN
Panel Member

Appendix P: Certification of Technical Review

CERTIFICATION OF TECHNICAL REVIEW

This is to certify that the proposal entitled "**THE ANALGESIC ACTIVITY OF OREGANO *(Origanum vulgare* L.) LEAF EXTRACT IN SPRAGUE DAWLEY RATS"** by Chermagne Yrrah P. Abiqui, Ace Jhuniel V. Manzo, Mikaela Kathryn C. Solivio, and Andrei Jullian C. Tapon has undergone technical review and has been accepted and approved by the undersigned.

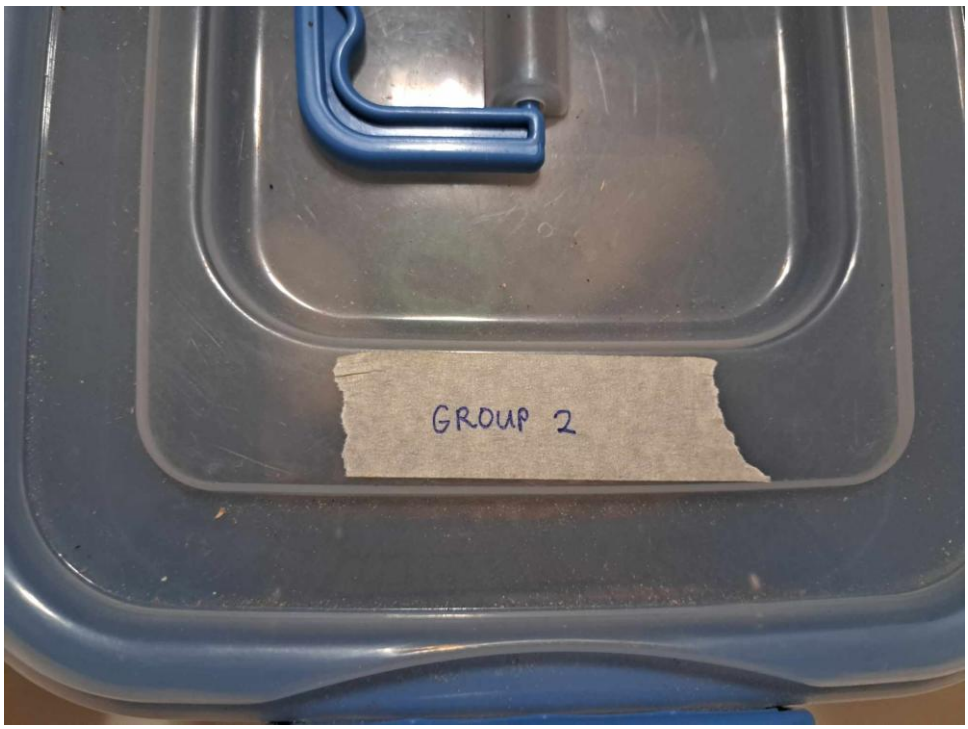
REY MARK A. ALMAREZ	**11/04/2024**
Signature over Printed Name of Adviser	Date Signed
JESSYREE J. TAÑO	**11/04/2024**
Signature over Printed Name Chairman of the Panel	Date Signed
KRISTINE MARIE ERIKA C. MANALO	**11/04/2024**
Signature over Printed Name Panel Member	Date Signed
RAPHAELLA ERICKA J. CONCEPCION	**11/04/2024**
Signature over Printed Name Panel Member	Date Signed
REXON A. CHAN	**11/04/2024**
Signature over Printed Name Panel Member	Date Signed
MARY JOYCE M. BAD-EY	**11/04/2024**
Signature over Printed Name Panel Member	Date Signed
GENOA P. SABADO	**11/04/2024**
Signature over Printed Name Panel Member	Date Signed

Appendix O: Photo Documentation

Seminar on Animal Handling

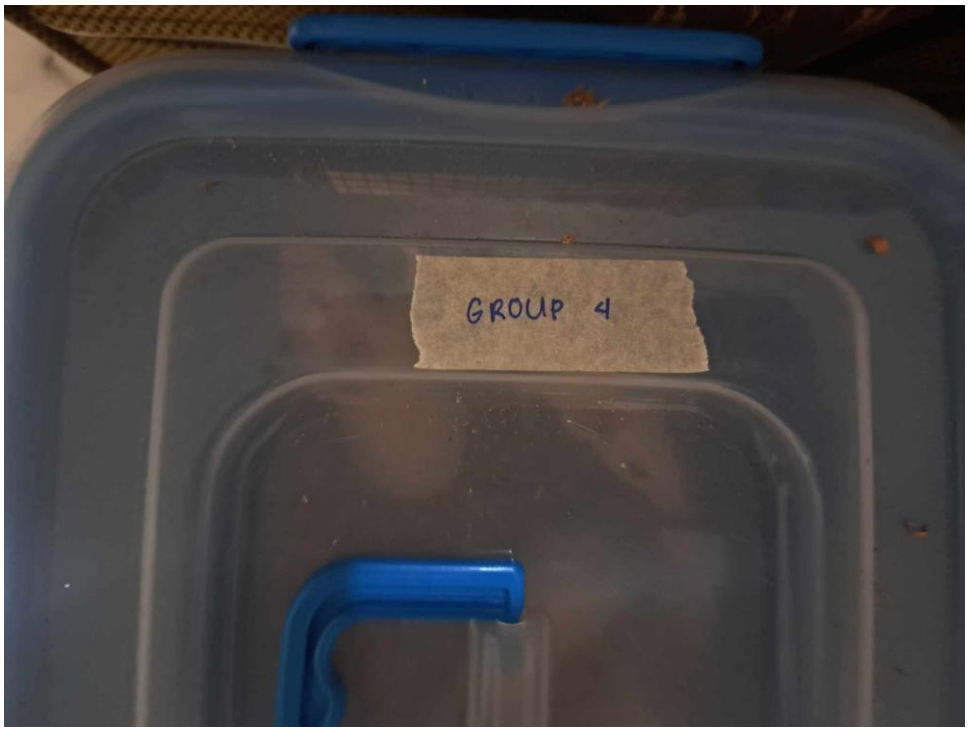
Acclimatization of Test Animals

Acclimatization of Test Animals

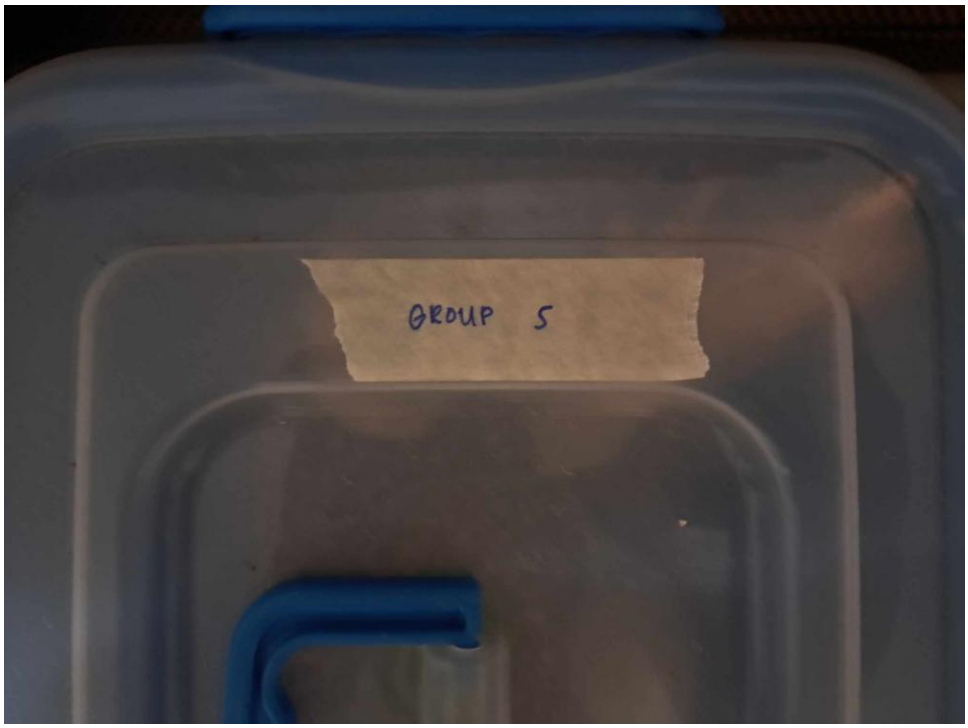


Acclimatization of Test Animals

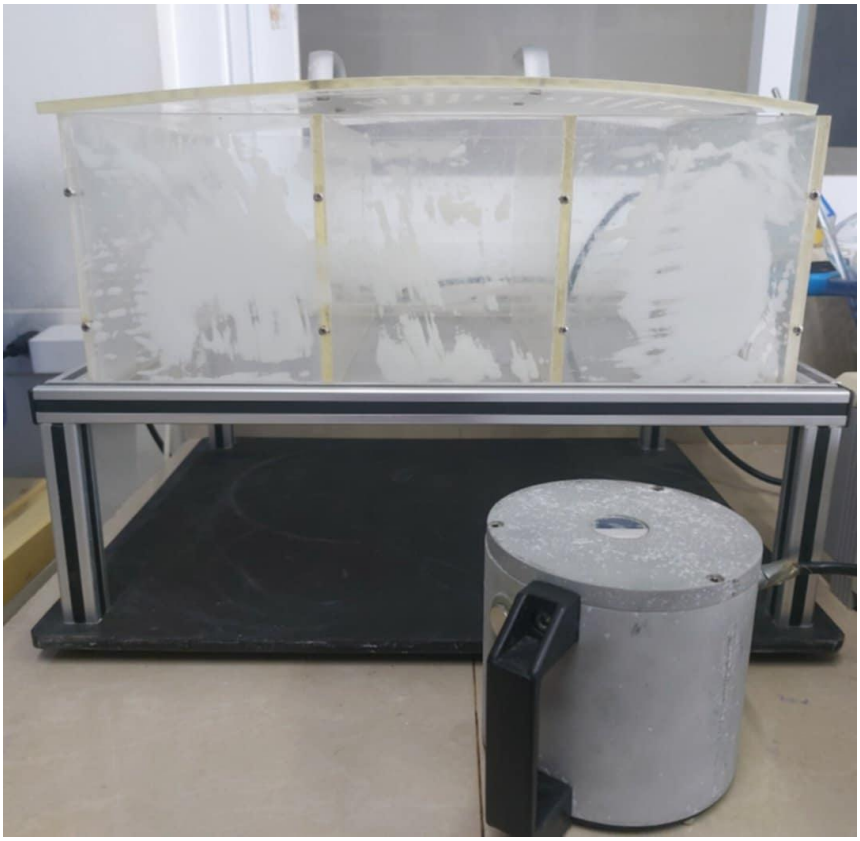
Acclimatization of Test Animals



Acclimatization of Test Animals



The Plantar Apparatus



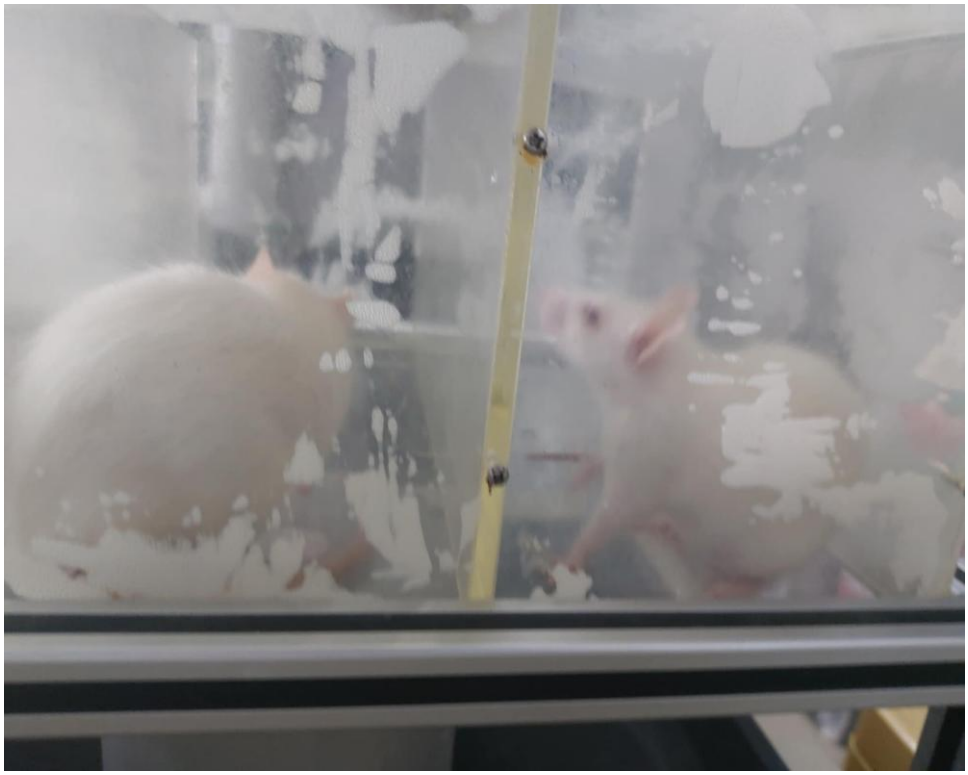
The Soxhlet Apparatus

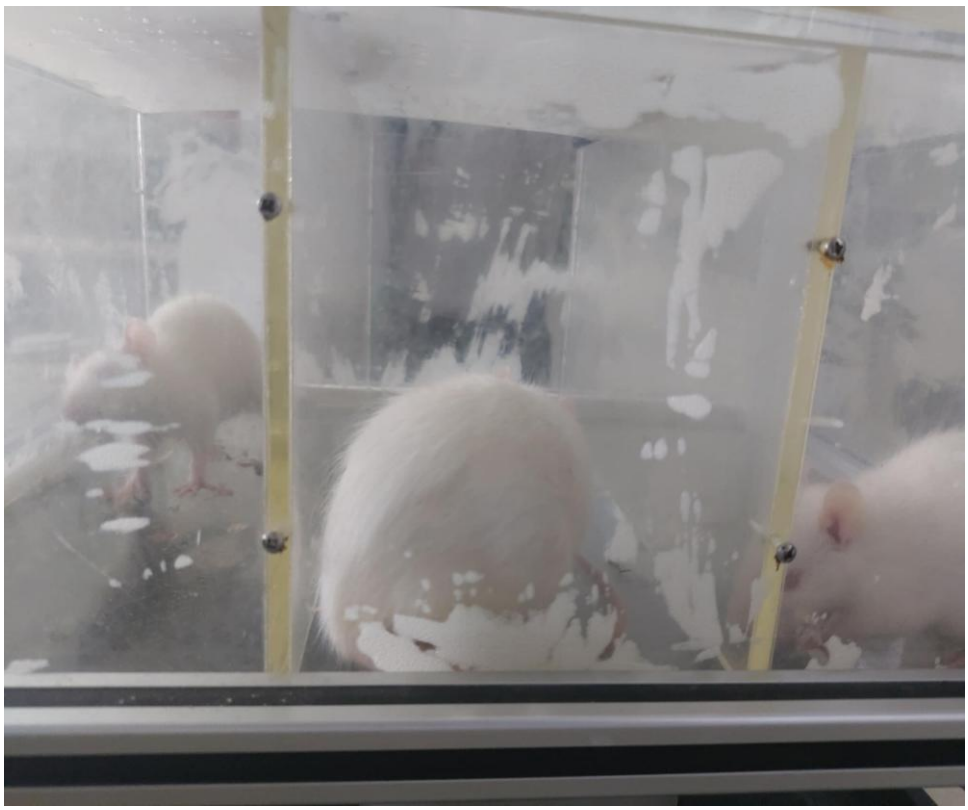
Soxhlet Distillation

Oregano Extract

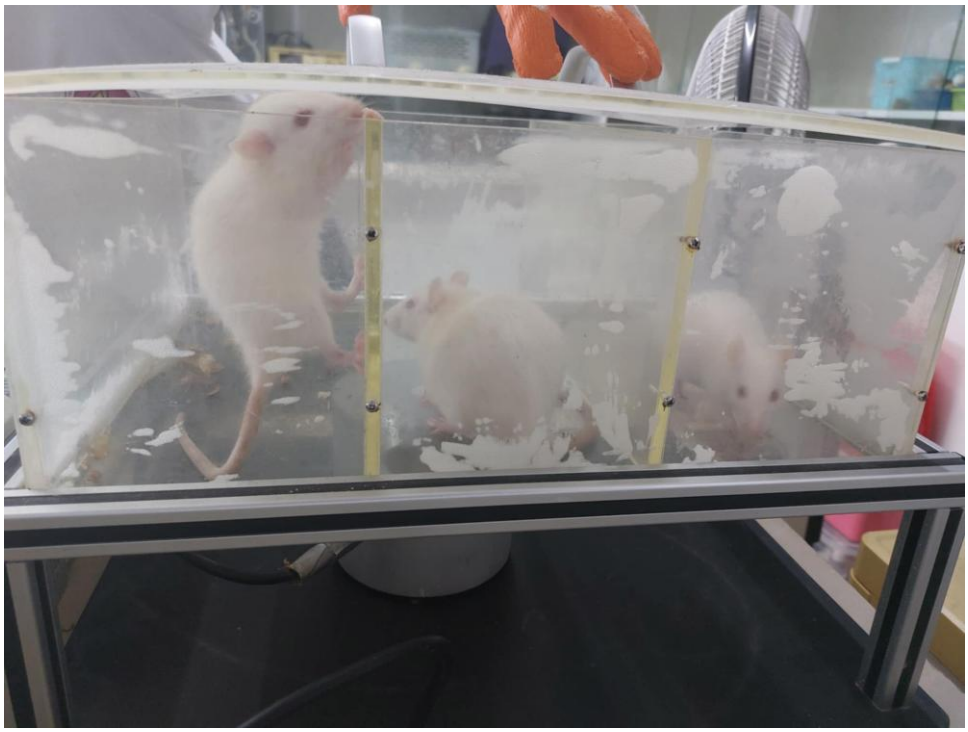
The Rat's Paw on the Heat Source

Test Group A (25% Concentration)

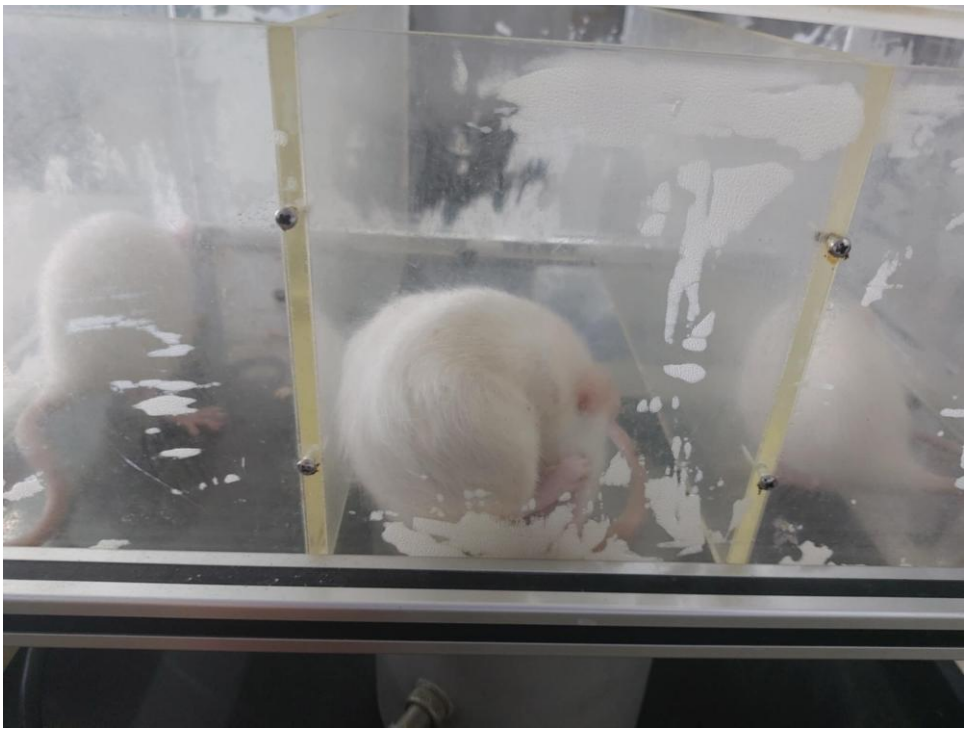




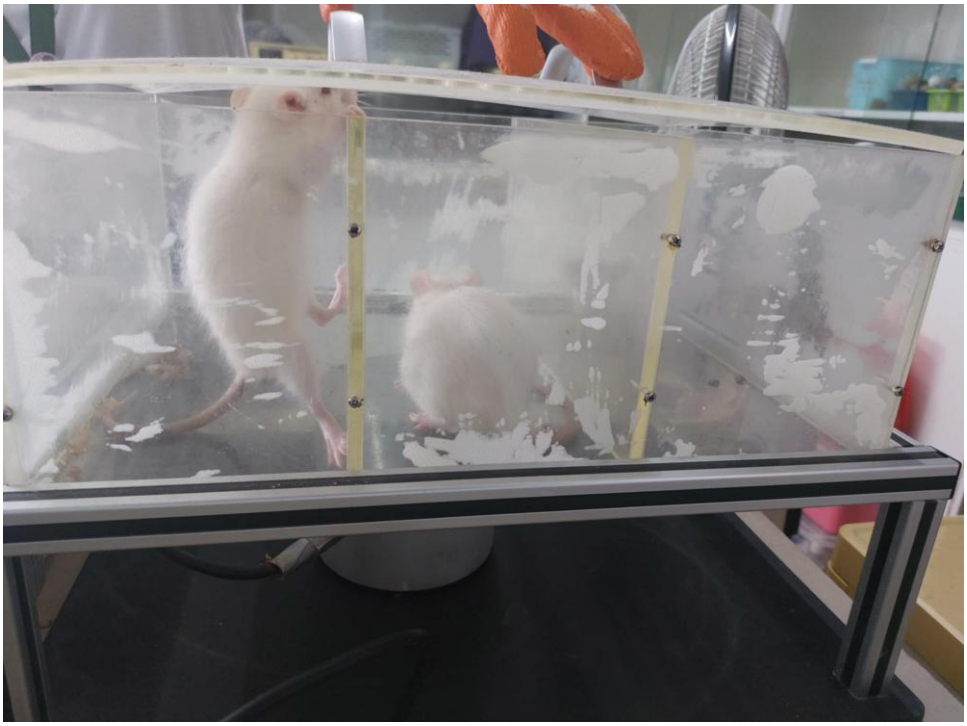
Test Group B (50% Concentration)

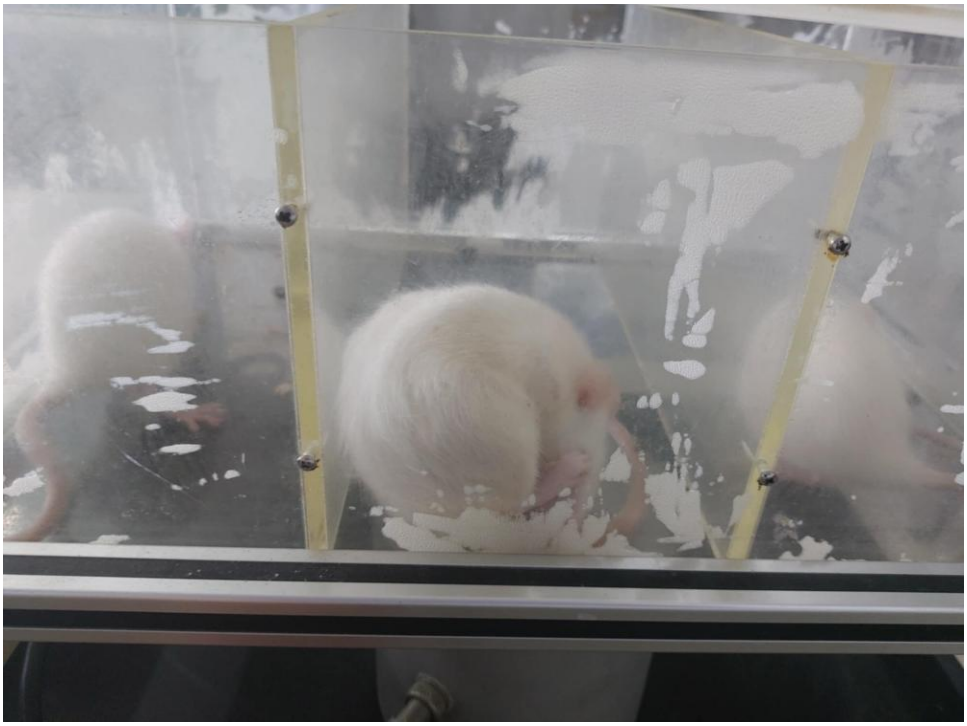


Test Group C (75% Concentration)

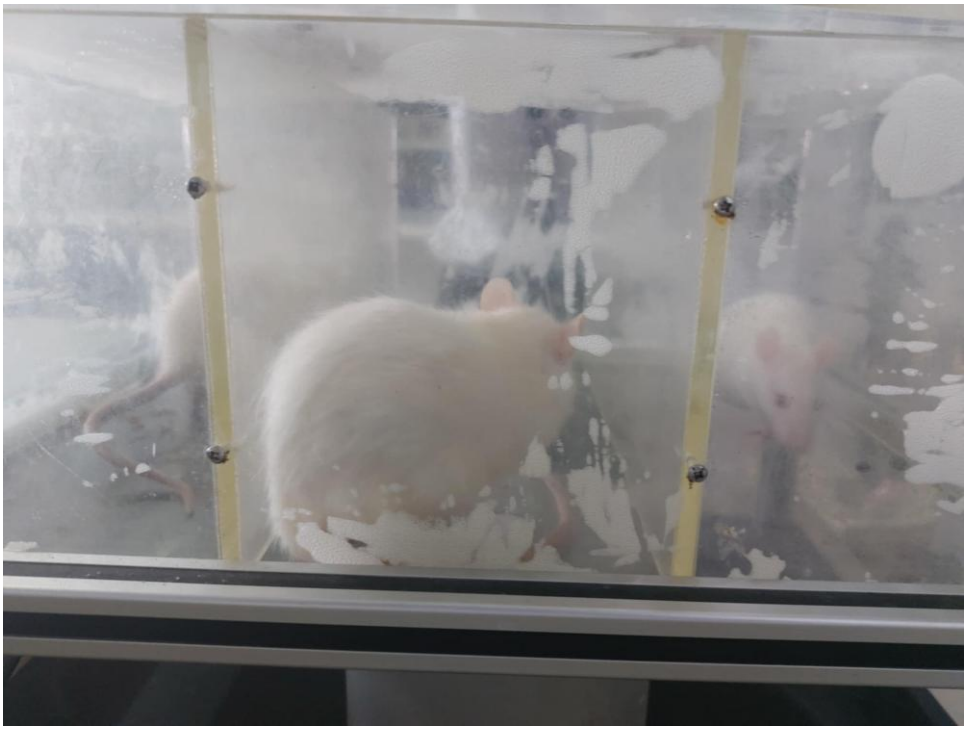


Test Group D (Positive Control)





Test Group E (Negative Control)



CURRICULUM

VITAE

LC-REC Form #002
CV TEMPLATE

LORMA COLLEGES

CURRICULUM VITAE

CHERMAGNE YRRAH P. ABIQUI

I. PERSONAL INFORMATION

Address	: Baroro, Bacnotan, La Union,Philippines
Contact Number	: 0960 287 8483
Email Address	: chermagneyrrah.abiqui@lorma.edu
Date of Birth	: 24 April 2007
Place of Birth	: City of San Fernando, La Union, Philippines

II. EDUCATIONAL BACKGROUND

2023-2025 **Senior High School - STEM-HAS (Science, Technology, Engineering, and Mathematics - Health Allied Strand)**
Lorma Colleges Senior High School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2019-2023 **Junior High School**
Lorma Colleges Special Science High School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2013-2019 **Grade School**
Lorma Grade School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2010-2013 **Preschool**
Vineyard Christian Academy
Brgy. Pagdaraoan, San Fernando City, La Union, Philippines

III. AWARDS/CITATIONS/RECOGNITIONS RECEIVED

Honor Student

Lorma Colleges, Senior High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Special Science High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Grade School, Urbiztondo, San Juan, La Union
Vineyard Christian Academy, Pagdaraoan, San Fernando City, La Union

Special Awardee

Lorma Colleges, Senior High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Special Science High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Grade School, Urbiztondo, San Juan, La Union
Vineyard Christian Academy, Pagdaraoan, San Fernando City, La Union

Outstanding Awardee

Lorma Colleges, Senior High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Special Science High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Grade School, Urbiztondo, San Juan, La Union
Vineyard Christian Academy, Pagdaraoan, San Fernando City, La Union

Citation in Research

Lorma Colleges, Urbiztondo, San Juan, La Union, 2025
Lorma Colleges, Urbiztondo, San Juan, La Union, 2024
Lorma Colleges, Urbiztondo, San Juan, La Union, 2023

IV. SEMINARS ATTENDED:

Media and Artificial Intelligence for Junior-Senior High School

Lorma Colleges
Urbiztondo, San Juan, La Union
March 2025

Safe Animal Handling and Training

Lorma Colleges
Carlatan, City of San Fernando, La Union
October 2024

We are the Dreamers: Senior High School Career Orientation Program

Lorma Colleges
Urbiztondo, San Juan, La Union
January 2024

S.O.A.R: Self-Efficacy, Optimism, and Affect Regeneration

Lorma Colleges
Urbiztondo, San Juan, La Union
November 2023

Mind at Ease, Mind at Peace
Lorma Colleges
Urbiztondo, San Juan, La Union
September 2023

S.A.I.L.: Self-Awareness, an Inital Leap
Lorma Colleges
Urbiztondo, San Juan, La Union
September 2023

AYCV 2023 ASEAN Youth Camp and International Teacher Conference
Nguyen Hue High School
Thua Thien Hue Province, Vietnam
July 2023

2023 World Water Day Forum
Philippine Red Cross
Bauang, La Union
April 2023

Development of Instructional Materials on Campus Journalism
Regional Schools Press Conference
Zoom Teleconferencing Platform
November 2021

V. INVOLVEMENT IN RESEARCH/RESEARCHES CONDUCTED

The Analgesic Activity of Oregano *(Origanum vulgare* L.*)* Leaf Extract on Sprague Dawley Rats
May 2025
Chairman, Researcher, Writer, Editor

Navigating The Sleepscape: Exploring The Challenges Encountered By Lorma High School Students In Maintaining Healthy Sleep Habits
May 2024
Chairman, Researcher, Writer, Editor

Lived Experiences of Lorma Special Science High School Students in Attending Online Classes
June 2023
Co-Chairman, Researcher, Writer, Editor

LC-REC Form #002
CV TEMPLATE

LORMA COLLEGES

CURRICULUM VITAE

ACE JHUNIEL V. MANZO

I. PERSONAL INFORMATION

Address	: Poblacion, Bacnotan, La Union, Philippines
Contact Number	: 0969 229 3773
Email Address	: acejhuniel.manzo@lorma.edu
Date of Birth	: 08 October 2006
Place of Birth	: Dagupan City, Pangasinan, Philippines

II. EDUCATIONAL BACKGROUND

2023-2025 **Senior High School - STEM-HAS (Science, Technology, Engineering, and Mathematics - Health Allied Strand)**
Lorma Colleges Senior High School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2019-2023 **Junior High School**
Lorma Colleges Special Science High School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2013-2019 **Grade School**
Lorma Grade School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2010-2013 **Preschool**
Lorma Pre School
Brgy. Urbiztondo, San Juan, La Union, Philippines

III. AWARDS/CITATIONS/RECOGNITIONS RECEIVED

Honor Student

Lorma Colleges, Senior High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Special Science High School, Urbiztondo, San Juan, La Union

Outstanding Awardee

Lorma Colleges, Senior High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Special Science High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Grade School, Urbiztondo, San Juan, La Union
Lorma Colleges. Pre School, Urbiztondo, San Juan, La Union

Citation in Research

Lorma Colleges, Urbiztondo, San Juan, La Union, 2024
Lorma Colleges, Urbiztondo, San Juan, La Union, 2023

IV. SEMINARS ATTENDED:

Safe Animal Handling and Training

Lorma Colleges
Carlatan, City of San Fernando, La Union
October 2024

V. INVOLVEMENT IN RESEARCH/RESEARCHES CONDUCTED

The Analgesic Activity of Oregano *(Origanum vulgare* L.*)* Leaf Extract on Sprague Dawley Rats

May 2025
Researcher, Writer, Editor

Through The Youth's Lens: The Involvement of Lorma Colleges' College Students in Community Engagement

May 2024
Researcher, Writer, Editor

Student's Perception of Covid-19 Pandemic Fatal Information Through Mass Media

June 2023
Researcher, Writer, Editor

LORMA COLLEGES

LC-REC Form #002
CV TEMPLATE

CURRICULUM VITAE

MIKAELA KATHRYN C. SOLIVIO

I. PERSONAL INFORMATION

Address	: San Juan, La Union
Contact Number	: 09568575856
Email Address	: mikaelakathryn.solivio@lorma.edu
Date of Birth	: 13 July 2007
Place of Birth	: Lorma Medical Center, San Fernando City, La Union

II. EDUCATIONAL BACKGROUND

2023–Present — **Senior High School - STEM-HAS (Science, Technology, Engineering, and Mathematics - Health Allied Strand)**
Lorma Special Science High School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2019–2023 — **Junior High School**
Lorma Special Science High School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2014–2019 — **Grade School**
Lorma Grade School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2012–2014 — **Preschool**
Lorma Preschool
Brgy. Urbiztondo, San Juan, La Union, Philippines

III. AWARDS/CITATIONS/RECOGNITIONS RECEIVED

2019 — 1st Loyalty Award
Perfect Attendance

2020	Perfect Attendance
2021	Outstanding Student
2022	With Honors
	Apec Cyber Academy Platinum Medalist
	Perfect Attendance
2023	Outstanding Student
	Apec Cyber Academy Bronze Medalist
	Perfect Attendance
	1st Loyalty Award
2024	Outstanding Student

IV. SEMINARS ATTENDED:

Safe Animal Handling and Training
Lorma Colleges
Carlatan, City of San Fernando, La Union
October 2024

V. INVOLVEMENT IN RESEARCH/RESEARCHES CONDUCTED:

The Analgesic Activity of Oregano *(Origanum vulgare* L.*)* Leaf Extract on Sprague Dawley Rats
May 2025

Exploring the Clinical Journey of Professional Nurses: A Mixed-Method Inquiry into their Professional Journey
May 2024

Familial Attitudes to an LGBTQ+ Youth's Identity: A Family Connection and a Well-Being Perspective
June 2023

LC-REC Form #002
CV TEMPLATE

CURRICULUM VITAE

ANDREI JULLIAN C. TAPON

I. PERSONAL INFORMATION

Address	: Capitol View Subdivision, San Fernando, La Union
Contact Number	: 0949 802 8943
Email Address	: andreijullian.tapon@lorma.edu
Date of Birth	: 14 July 2006
Place of Birth	: City of San Fernando, La Union, Philippines

II. EDUCATIONAL BACKGROUND

2023-present **Senior High School - STEM-HAS (Science, Technology, Engineering, and Mathematics - Health Allied Strand)**
Lorma Colleges Senior High School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2019-2023 **Junior High School**
Lorma Colleges Special Science High School
Brgy. Urbiztondo, San Juan, La Union, Philippines

2013-2019 **Grade School**
Lorma Grade School
Brgy. Urbiztondo, San Juan, La Union, Philippines

III. AWARDS/CITATIONS/RECOGNITIONS RECEIVED

Outstanding Awardee
Lorma Colleges, Senior High School, Urbiztondo, San Juan, La Union
Lorma Colleges, Special Science High School, Urbiztondo, San Juan, La Union

Citation in Research

Lorma Colleges, Urbiztondo, San Juan, La Union, 2024
Lorma Colleges, Urbiztondo, San Juan, La Union, 2023

IV. SEMINARS ATTENDED:

Safe Animal Handling and Training

Lorma Colleges
Carlatan, City of San Fernando, La Union
October 2024

V. INVOLVEMENT IN RESEARCH/RESEARCHES CONDUCTED

The Analgesic Activity of Oregano *(Origanum vulgare* L.*)* Leaf Extract on Sprague Dawley Rats
May 2025

Behind Counter Exploring the Experience of Pharmacists in Handling Prescription for Patients
May 2024

Students' Perception of COVID-19 Pandemic Fatal Information Through Mass Media
June 2023

LORMA COLLEGES

LC-REC Form #003
CV TEMPLATE

CURRICULUM VITAE

REY MARK A. ALMAREZ

I. PERSONAL INFORMATION

Address	: Salcedo, Luna, La Union
Contact Number	: 09610529775
Email add	: reymark.almarez@lorma.edu
Date of Birth	: 23 March 1995
Place of Birth	: Salcedo, Luna, La Union

II. EDUCATIONAL BACKGROUND

2006-2011 **Secondary Education**
Luna National High School
Barrientos, Luna, La Union

2014-2018 **Bachelor of Secondary Education Major in English**
Don Mariano Marcos Memorial State University – North La Union Campus
Sapilang, Bacnotan, La Union

2024 - Present **Master of Arts in English**
Ilocos Sur Polytechnic State College
Tagudin, Ilocos Sur

III. AWARDS/CITATIONS/RECOGNITIONS RECEIVED

2018 **Cum Laude**
Bachelor of Secondary Education Major in English
Don Mariano Marcos Memorial State University – North La Union Campus
Sapilang, Bacnotan, La Union

IV. WORK EXPERIENCE

2018 Substitute English Teacher
Lord of Zion Divine School
Bacnotan, La union

2019 – 2020	Foreign English Teacher Yi Zhong Number 1 Middle School Yu Zhong, Gansu Province, China
2021 – Present	English Teacher Lorma Colleges Basic Education Schools Urbiztondo, San Juan, La union

V. ELIGIBILITY

2018	Civil Service (Honor Graduate Eligibility of PD 907) Civil Service Commission San Fernando, La Union
01/11/2019	Professional License for Teachers Philippine Regulation Commission PRC - Baguio

VI. SEMINARS ATTENDED

08/1-3/2022	**2022 INSET for Junior High School (PEAC)**	**Zoom**
08/15-19/2022	**FAST Series 1: Rethinking Hyflex Learning**	**Lorma**
08/22-26/2022	**FAST Series 2: Tapping into the Power of Apple Technology**	**Lorma**
03/31/2022	**New Normal to Better Normal: Finding the Right Solutions to Post-Pandemic Learning Success**	**Zoom**
10/18/2024	**Reimagining, Co-creating Lifelong Learning for Youth and Adults**	**Webinar**

VII. INVOLVEMENT IN RESEARCH/ RESEARCHES CONDUCTED

2018	**"The Correlation of Vocabulary and Pronunciation Drills to the Level of English Proficiency of Grade 12 Students of Luna National Vocational High School"** Student Researcher Don Mariano Marcos Memorial State University – North La Union Campus