

**EVALUATION OF THE IN VITRO ANTHELMENTIC ACTIVITY
AND TOXICITY OF BALAYONG (*Cassia javanica* L.) BARK
ETHANOLIC EXTRACTS IN OZAMIZ CITY, PHILIPPINES**

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BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY

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CERTIFICATE OF PANEL APPROVAL

The research paper attached hereto, entitled "EVALUATION OF THE IN VITRO ANTHELMINTIC ACTIVITY AND TOXICITY OF BALAYONG (*Cassia javanica* L.) BARK ETHANOLIC EXTRACTS IN OZAMIZ CITY, PHILIPPINES", prepared and submitted by DAISY JOY D. BECOY, KC M. BULAWAN, ROANNE JANE P. BUGAS, KRIZZA MAE A. CAMPECIÑO, JEANNIE ROSE C. GALLARDO, JANYL LEAN M. GERALDIZO, NICOLE FAITH A. SEMBRANO, in partial fulfillment of the requirements for the degree **BACHELOR OF SCIENCE IN MEDICAL TECHNOLOGY**, is hereby recommended for approval.

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ABSTRACT

In the Philippines, parasitic infections caused by soil-transmitted helminths such as *Ascaris lumbricoides* and *Trichuris trichiura* remain a significant public health concern despite the implementation of deworming programs. This study investigated the anthelmintic potential of *ethanolic extracts of Cassia javanica L.* bark against these parasites and assessed their toxic effects using the brine shrimp lethality assay. Using an in vitro experimental design, bark samples collected from Ozamiz City were extracted using 70% ethanol. Anthelmintic activity was evaluated by measuring the paralysis and death times at different concentrations (1%, 2%, 5%, and 10%) and comparing them with the control groups. Toxicity was assessed using *Artemia salina* nauplii, and mortality was recorded after 24 hours to determine the LC_{50} value. The results showed a concentration-dependent anthelmintic effect, with the 10% extract producing the fastest paralysis and death times for both parasites, particularly *T. trichiura*. Statistical analysis confirmed significant differences among the treatment groups ($p = 0.005$ – 0.009). Toxicity testing revealed 100% mortality across all concentrations, indicating high toxicity with an LC_{50} value below $100\text{ }\mu\text{g/mL}$. The findings suggest that *C. javanica L.* bark extract shows strong anthelmintic activity but also exhibits high cytotoxicity, highlighting the need for further studies on safety, dosage optimization, and the isolation of active compounds for potential therapeutic use.

Keywords: *contamination, brine shrimp, parasites, mortality, transmission*

DEDICATION

This research is respectfully dedicated to our families, whose support, encouragement, and sacrifices have been our source of strength throughout this academic journey. To our parents, we express our sincere gratitude for their constant prayers, trust in our abilities, and for inspiring us to do our best.

*Furthermore, this study is dedicated to the institutions and individuals who supported us, particularly **Mindanao State University – Iligan Institute of Technology (MSU-IIT)** and **Mindanao State University – Naawan (MSU Naawan)**, for providing the facilities and assistance needed for our experiments.*

To our friends and classmates, whose support, understanding, and shared efforts helped us continue despite challenges, we also dedicate this work to each of us for not giving up even in the most difficult times.

Above all, this research is dedicated to God Almighty, whose guidance, wisdom, and blessings made this achievement possible.

The Researchers

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INTRODUCTION

Background of the Study

Parasitic infections continue to be a public concern, particularly in nations where sanitation, hygiene, and access to effective treatment are still limited. These diseases are a major cause of morbidity worldwide, especially in children, where prolonged exposure can result in malnutrition, stunted growth, and reduced cognitive function. Parasitic infections continue despite treatment alternatives because of drug accessibility problems, reinfection, and growing concerns about decreased therapeutic efficacy over time (World Health Organization, 2022).

Despite the implementation of long-term mass deworming programs, soil-transmitted helminths remain a widespread issue in the Philippines. Research indicates that infection rates remain moderate to high in several communities, with the highest impact often seen in low-income and rural regions. According to a national meta-analysis, species such as *Ascaris lumbricoides* and *Trichuris trichiura* are frequently detected among school-age children, even after intervention efforts (delos Trinos & Wulandari, 2021). Current local data indicate that these parasites are quite common in some regions of the country, with specific regions and groups experiencing prevalence rates ranging from 20% to over 40% (de Leon et al., 2023; Robles et al., 2021).

These parasites are transmitted through ingestion of infective eggs from contaminated soil, food, or water. Once inside the human body, they develop in the intestinal tract and may cause a range of clinical manifestations. *A. lumbricoides* is a large intestinal roundworm that resides in the human gastrointestinal

tract and can cause intestinal obstruction, malabsorption, and abdominal discomfort. Meanwhile, *T. trichiura*, commonly referred to as whipworm, adheres to the large intestine and, in severe infections, can cause anemia, rectal prolapse, and persistent diarrhea. Both parasites are quite common in places with inadequate sanitation because they are spread by consuming contaminated food or water that contains infectious eggs (Hotez et al., 2020). These observations suggest that helminths remain a persistent health challenge in the Philippines, even with national control efforts in place. This underscores the need to develop new or supplemental strategies to improve parasite management and control (O'Connell et al., 2020; Pullan et al., 2020).

In laboratory and research settings, these parasites are often studied at the egg stage because their life cycle begins with eggs that must undergo environmental development before becoming infective. This developmental phase is a critical target for transmission control; by preventing eggs from maturing or hatching, researchers can effectively break the life cycle and lower infection rates. Because of this, many studies focus on evaluating substances that may interfere with egg viability and larval development as a potential strategy for controlling helminth infections (Ncube et al., 2021).

The control of parasitic infections has long relied on commercially available anthelmintic drugs such as albendazole and mebendazole. These drugs are effective against soil-transmitted helminths; however, concerns have been raised regarding the emergence of drug resistance, reinfection in endemic areas, and limited access in low-resource settings.

These issues have encouraged the search for alternative therapeutic sources, particularly from medicinal plants (World Health Organization, 2022; Hotez et al., 2020).

Plant-derived compounds have been widely investigated as potential sources of anthelmintic agents. Medicinal plants contain secondary metabolites such as flavonoids, tannins, alkaloids, and saponins, which have been reported to exhibit antiparasitic and other biological activities. These compounds may interfere with parasite metabolism, damage cellular structures, or inhibit growth and development of helminths (Kumar & Pandey, 2021; Ncube et al., 2021).

However, natural origin does not automatically imply safety. Many plant extracts that exhibit biological activity may also exhibit toxic effects on normal cells, depending on concentration and chemical composition. Because of this, toxicity testing is necessary to evaluate the safety profile of plant extracts before considering further pharmacological application. A commonly used preliminary method is the brine shrimp lethality assay, which serves as a simple model for general toxicity screening (Meyer et al., 1982; Ali et al., 2023).

In this context, Balayong, or Palawan Cherry (*Cassia javanica* L.), is selected for this study. *C. javanica* L. is a pink shower tree belonging to the Fabaceae family and is commonly found in tropical regions. Species in the genus *Cassia* contain phytochemicals such as flavonoids, tannins, and anthraquinones, which are associated with antimicrobial, antioxidant, and antiparasitic activities. Reviews on the genus report that these compounds may contribute to membrane disruption and metabolic inhibition in biological organisms, supporting their potential pharmacological

effects (Suleiman et al., 2022; González et al., 2020).

In vitro studies have shown that *C. javanica* L. extracts exhibit significant biological properties. Specifically, methanolic and ethyl acetate extracts have been found to exhibit both antioxidant activity, attributed to their phenolic content, and antibacterial effects against clinically significant bacterial strains. Furthermore, the identification of various secondary metabolites within the plant confirms its potential therapeutic value and pharmacological importance (Haleem et al., 2022; Al-Azhar University study, 2023). In addition, contemporary pharmacological studies indicate that *C. javanica* L. has extensive biological applications, showing promise in antimicrobial, antioxidant, anticancer, and antidiabetic treatments. These therapeutic properties are linked to its high concentration of polyphenolic compounds, including anthraquinones and flavonoids, which are known for their ability to disrupt cellular metabolism and microbial proliferation (Li et al., 2023; Zhang et al., 2024).

Despite these findings on related Cassia species, there are still few experimental studies evaluating the anthelmintic and cytotoxic activities of *C. javanica* L. together, particularly its bark ethanolic extract, which is locally available in Ozamiz City, Philippines. This lack of data highlights the need for further investigation to determine its biological potential and safety profile using standardized in vitro assays. Therefore, this study evaluates the in vitro anthelmintic activity and cytotoxicity of *C. javanica* L. bark ethanolic extract using both anthelmintic and brine shrimp lethality assays.

Objectives of the Study

This study evaluated the anthelmintic activity and toxicity of *ethanolic extracts* of *Cassia javanica* L. bark using in vitro assays. Specifically, it aimed to:

1. Assess the in vitro anthelmintic activity of varying concentrations (1%, 2%, 5%, 10%) of *C. javanica* L. bark ethanolic extracts against *A. lumbricoides* and *T. trichiura* in terms of worm paralysis and death;
2. Determine whether significant differences existed in the in vitro anthelmintic activity of 1%, 2%, 5%, and 10% *C. javanica* L. bark ethanolic extract, compared with the positive and negative control groups; and
3. Evaluate the toxicity of *C. javanica* L. bark ethanolic extract at concentrations of 1.0000 mg/mL, 0.5000 mg/mL, 0.2500 mg/mL, 0.1250 mg/mL, 0.0625 mg/mL, and 0.0313 mg/mL using the Brine Shrimp Lethality Assay (BSLA).

Significance of the Study

This research is significant for its contribution to the search for plant-derived anthelmintics by examining the cytotoxicity and in vitro antiparasitic effects of *the ethanolic extract of C. javanica* L. bark. The study provides foundational evidence on

the extract's impact on the eggs of *A. lumbricoides* and *T. trichiuris*, which remain the primary causes of soil-transmitted infections in developing nations. Furthermore, using the brine shrimp lethality assay to assess general toxicity helped establish a safety profile and determine whether the extract is suitable for deeper pharmacological investigations. This study also benefited future researchers and students as a reference for in vitro experimental design for anthelmintic and toxicity testing. Furthermore, it supported the exploration of medicinal plants as potential sources of bioactive compounds for developing alternative treatments for parasitic' infections, especially in areas where helminthiasis remains prevalent.

Scope and Delimitations

The study's scope was limited to two intestinal helminth species: *T. trichiura* and *A. lumbricoides*. It excluded the third parasite of the "unholy three" because these two are the most common causes of parasitic infections in the local area. This study does not include a broader range of parasites or the examination of potential side effects on human subjects. Additionally, the extract's potential toxicity was evaluated using the brine shrimp lethality assay with *Artemia salina* nauplii, in which mortality rates were used to determine LC₅₀ values as an indicator of overall toxicity. The study also did not isolate or identify specific bioactive compounds responsible for the observed effects. Environmental factors, such as the long-term stability of the extract and pharmacokinetics, were not considered. Therefore, the results were limited to preliminary screening of anthelmintic and toxic activities under controlled laboratory conditions.

MATERIALS AND METHODS

Research Design

This study employed a quantitative experimental research design to evaluate the in vitro anthelmintic activity and toxicity of *C. javanica* L. bark ethanolic extract against *Trichuris trichiura* and *Ascaris lumbricoides*, and assess its toxicity as a basis for its potential medicinal application. Systematic quantitative data collection and analysis

were used to measure the extract's effects, enabling accurate observation and evaluation of its anthelmintic and toxicological properties (Kelkar, 2023).

Research Setting

The sample collection was conducted at Brgy. Malaubang, Ozamiz City, Misamis Occidental, Northern Mindanao, Philippines (8.1426° N, 123.8442° E). The specific tree for mature *C. javanica* bark was sourced here. The stool sample containing intestinal parasitic ova was collected at Barangay Baybay, San Roque, Ozamiz City, Misamis Occidental, Mindanao, Philippines, 8.1426, 123.8412 (8° 9' N, 123° 50' E). The sampling site was selected because it provided an appropriate setting for collecting the samples necessary to meet the study's objectives. The anthelmintic and toxicity assays were conducted at Misamis University-College of Medical Technology and at the College of Arts and Sciences-Natural Science building, ensuring proximity and proper testing conditions.

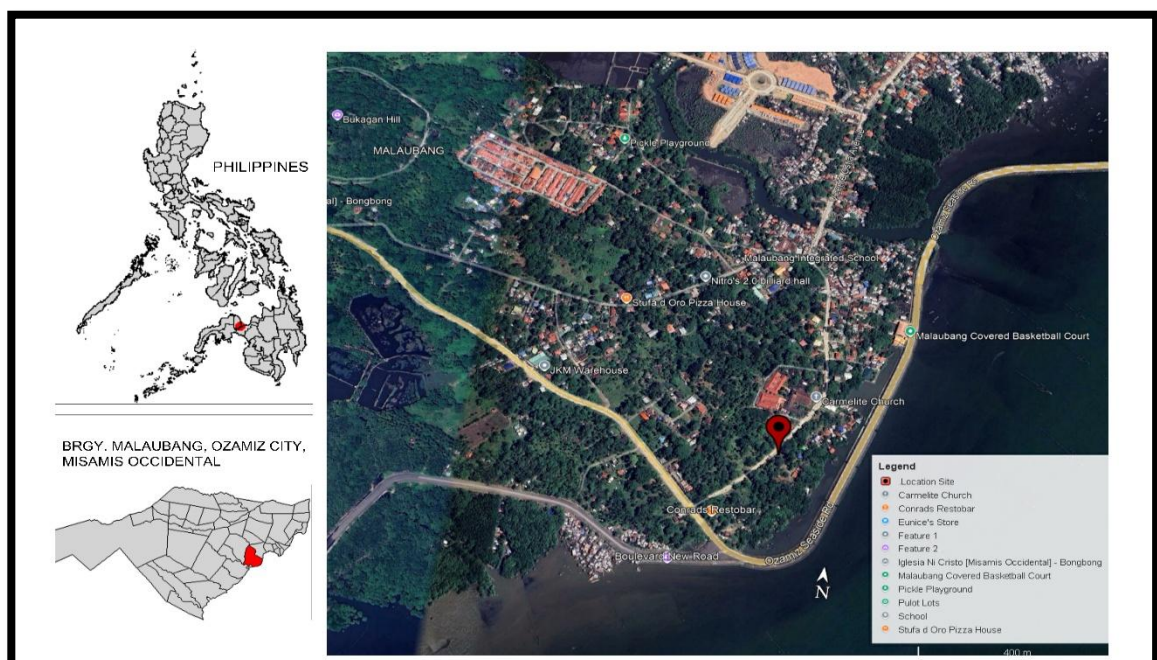


Figure 1. Map showing the study site

Sample Collection

Stool Sample Collection

Stool samples were collected from children with poor hygiene practices in Barangay Baybay, San Roque, Ozamiz City, after obtaining permission and informed consent from the participants' parents, along with assent forms. Each individual was provided with a sterile specimen container, and approximately 15 grams of stool were collected from each participant. Sterile, wide-mouthed polypropylene (PP) containers with secure, leak-proof lids were used to maintain sample integrity, preserve moisture, and prevent leakage. Care was taken to avoid contamination with soil, urine, or water, as these may destroy protozoan trophozoites or introduce extraneous organisms that could affect diagnostic accuracy.

After collection, all samples were properly labeled, placed in a cool box, and immediately transported to the laboratory for analysis. To ensure reliability and preserve parasite viability, all samples were processed within 2 hours of collection (Aryal, 2021).

Parasite Isolation

The Harada–Mori and Baermann Funnel techniques were used to cultivate and recover newly hatched forms of the targeted helminths, as these methods are effective for isolating soil-transmitted nematodes. The Baermann Funnel technique is a standard method for recovering motile nematodes, such as *Ascaris lumbricoides*, by exploiting their natural movement through a moist medium. This technique is simple, cost-effective, and capable of recovering even low-motility or low-abundance species, making it suitable for both laboratory and field applications (Tintori et al., 2022).

On the other hand, the Harada–Mori technique is commonly used to culture larvae of soil-transmitted helminths such as *Trichuris trichiura*. In this method, eggs are allowed to hatch under controlled moisture conditions, and larvae migrate along a strip of moist filter paper, facilitating easier collection and microscopic examination (Centers for Disease Control and Prevention, 2019).



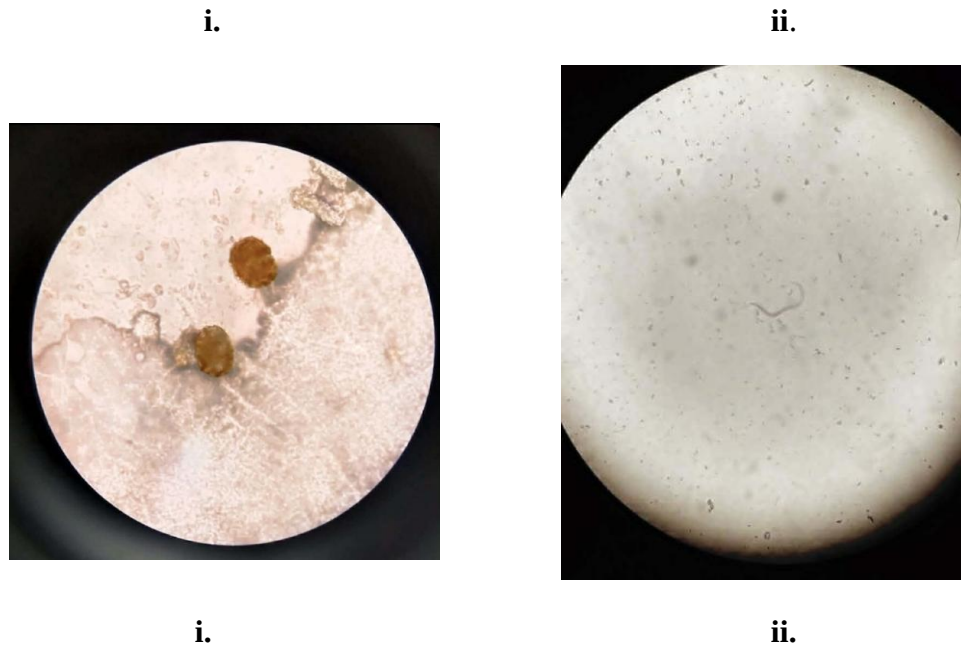


Figure 2. Microphotograph of *T. trichiura* ova (i); Freshly hatched *T. trichiura* from the Harada-Mori technique (ii); *A. lumbricoides* ova (iii); Freshly hatched *A. lumbricoides* from the Baermann funnel technique (iv) at 10x magnification

When combined, these two techniques provide a reliable approach for isolating and studying freshly hatched larvae of soil-transmitted helminths, making them suitable for in vitro antihelminthic and motility-based assays.

Bark Sample Collection

The bark of *Cassia javanica* was collected from a wild population in Barangay Malaubang, Ozamiz City. The collection was carried out in the morning, between approximately 08:00 and 11:00 AM, to take advantage of diurnal conditions that may

influence secondary metabolite concentration, since the levels of these compounds in medicinal plants were reported to vary depending on time of day and growth stage (Pandey & Mandal, 2013; Pandey & Das, 2014). Harvesting was conducted in dry weather, avoiding rain, dew, and high humidity to minimize moisture-related degradation and microbial contamination, in accordance with recommended practices for medicinal plant collection (World Health Organization [WHO], 2003; European Medicines Agency [EMA], 2023).

Cutting tools were properly sanitized prior to use and kept clean and dry to reduce the risk of contamination from soil or microorganisms during collection (EMA, 2023). The harvested plant material was not placed directly on the ground; instead, immediately after cutting, the samples were stored in clean mesh bags to ensure adequate airflow and prevent moisture accumulation or contact with contaminated surfaces (WHO, 2003; EMA, 2023).

To ensure proper taxonomic identification and traceability, voucher specimens were prepared for each batch of collected material. These consisted of pressed and dried representative aerial parts, labeled with complete collection details including the collector's name, date of collection, geographical coordinates, habitat description, plant part collected, and local name. The voucher specimens were submitted to a recognized herbarium for authentication and species identification (Ellis et al., 2007; WHO, 2003). The herbarium assigned voucher numbers, which were recorded and used in all subsequent experimental documentation.

Immediately after collection, the bark samples were transported to the processing facility under shaded and dry

conditions. Transportation time was minimized to reduce the risk of degradation of heat-sensitive or volatile phytochemicals. Upon arrival, the samples were stored in clean, dry, and well-ventilated conditions until further processing.

Preparation of Plant Extracts

The bark of *Cassia javanica* L. was thoroughly rinsed with distilled water to remove dust, dirt, and other contaminants collected during harvesting. The cleaned plant material was then air-dried in a shaded area at a controlled room temperature of 28 ± 2 °C until a constant weight was achieved. This drying method was used to preserve heat- and light-sensitive bioactive compounds such as flavonoids, phenolics, and terpenoids (Jirakitticharoen et al., 2022; Paragas et al., 2020). Shade-drying was considered effective in minimizing the degradation of sensitive phytochemicals and maintaining the integrity of the extract for subsequent pharmacological analysis.

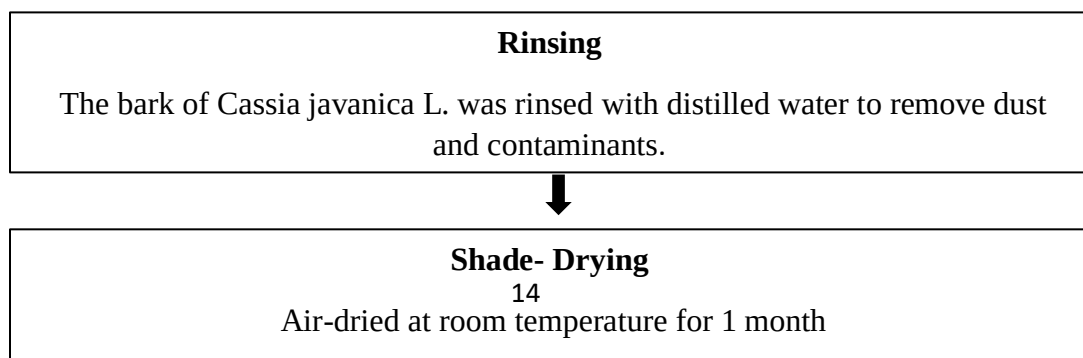
After complete drying, the plant material was ground into a coarse powder using a sterilized mechanical grinder. The powdered bark was then stored in airtight, amber-colored containers and kept protected from light, moisture, and heat until extraction. Proper storage was maintained to preserve the stability and biological activity of phytochemical constituents prior to testing (Torralba et al., 2015).

The extraction process was carried out using a hydroalcoholic solvent system. The 500 g powdered plant material was divided into five containers, with 100 g placed in each, and each portion was soaked in 1000 mL of 70% ethanol at a 1:10 (w/v) ratio and left to stand at room temperature for 72 hours. The mixture was stirred periodically to enhance solvent penetration and improve the extraction of bioactive compounds (Jirakitticharoen et al., 2022; Paragas et al., 2020). This method

effectively extracted flavonoids, phenolic acids, and other compounds associated with the plant's pharmacological properties, including antioxidant and anti-inflammatory activities.

After the maceration process, the mixture was filtered to separate plant residues from the liquid, yielding 3,500 mL of filtrate. This filtrate was then transported to Mindanao State University – Iligan Institute of Technology (MSU-IIT) for further processing, specifically for concentration using a rotary evaporator. The filtrate was concentrated under reduced pressure at a controlled temperature of 40–45 °C. This step allows the solvent to be gently removed without degrading heat-sensitive phytochemicals, thereby forming a semi-solid crude extract. Once concentration was completed, the crude extract was properly labeled with its source and batch information to ensure traceability. It was then stored in airtight amber containers to protect it from light-induced degradation and kept at 4–8 °C until further pharmacological evaluation (Torralba, Quiming, & Palacpac, 2015).

This hydroalcoholic maceration method has been widely applied in studies involving *C. javanica* L. bark. It has been shown to effectively preserve bioactive compounds while maintaining the chemical integrity of the extract for subsequent evaluation of pharmacological activities, including anti-inflammatory, analgesic, and related biological effects (Jirakitticharoen et al., 2022; Paragas et al., 2020; Torralba, Quiming, & Palacpac, 2015).



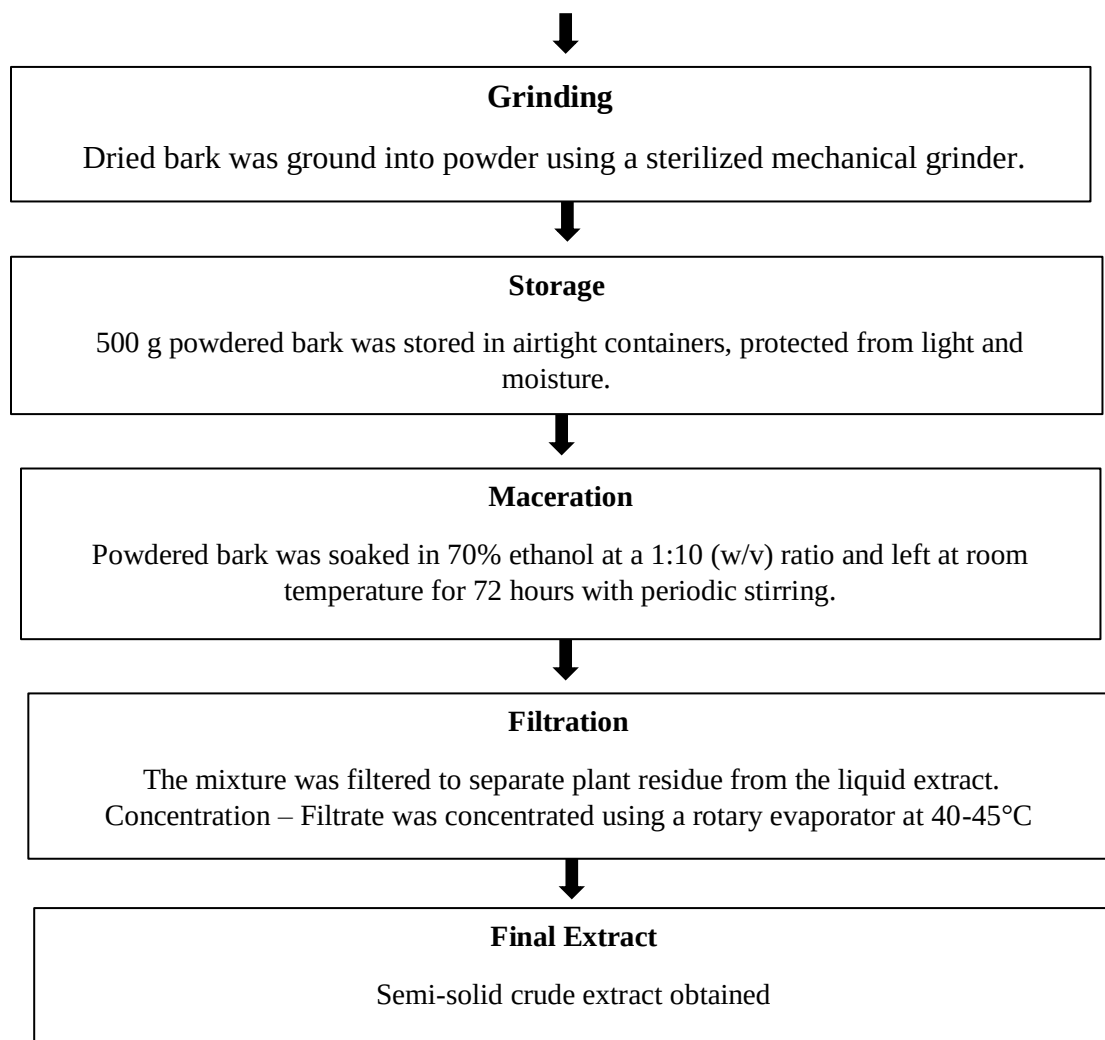


Figure 3. Schematic diagram of the preparation of plant extracts

In Vitro Anthelmintic Assay

The in vitro anthelmintic assay was adapted from the method established by Lamine et al. (2024). To begin the procedure, freshly hatched live *helminths* (*Ascaris lumbricoides*, *Trichuris trichiura*) were collected using the Baermann Funnel Technique and Harada–Mori technique. The organisms were isolated and individually transferred into Petri dishes containing different concentrations of the plant extract (1%, 2%, 5%,

and 10%), based on the concentration range commonly used in similar anthelmintic screening studies, as described by Lamine et al. (2024). Each concentration was performed in triplicate to ensure the reliability and reproducibility of results.

Control groups were also prepared for comparison purposes. Worms exposed to normal saline served as the negative control, while those treated with 200 µg/mL Pyrantel Embonate (Johnson & Johnson) served as the positive control (Lamine et al., 2021). Observations were conducted at regular intervals, typically every 5 minutes, for a total period of 30 minutes.

The anthelmintic activity was evaluated using two parameters: the onset of paralysis and the time of death. Paralysis was recorded when the worms ceased movement even after vigorous shaking. Death was confirmed when no movement was observed despite agitation or exposure to slightly warm water, as described by Hossen et al. (2024).

Brine shrimp Lethality Assay

The toxicity of different plant concentrations was evaluated using the brine shrimp lethality test (BSLT), which identified the appropriate solvent and concentration for the CAM assay. The brine shrimp eggs, as well as the seawater, were provided by Mindanao State University-Naawan Campus. The prepared seawater was placed in a small container that served as the hatching chamber. Shrimp eggs were introduced into the hatchery and aerated. After forty-eight hours, the larvae were collected and transferred to another container in preparation for the experiment.

Each container received 4 mL of seawater and 1 mL of

plant extract solution. The concentrations tested in the assay were 1 mg/mL, 0.5 mg/mL, 0.25 mg/mL, 0.125 mg/mL, 0.0625 mg/mL, and 0.03125 mg/mL, obtained by serial dilution. After the solutions were prepared, ten *Artemia salina* nauplii were introduced into each container. To ensure the reliability and accuracy of the results, three replicates were prepared for each concentration. For the negative control, 5 mL of artificial seawater was used. For the positive control, 1 mL of dimethyl sulfoxide (DMSO) was added to 4 mL of artificial seawater, yielding a final volume of 5 mL. A 2% (v/v) DMSO concentration was used, as higher concentrations, such as 5%, are considered excessive and may disrupt cell membranes. The cytotoxic effect of DMSO depended on its concentration, with higher levels being toxic to cell lines (Sangweni et al., 2021).

The containers were left uncovered under a lamp. After twenty-four hours, the number of surviving shrimps was counted and recorded (Supraja et al., 2018; Waghulde et al., 2019; Fauziah et al., 2022), and the percentage mortality was calculated using Equation 2. The toxicity of the extracts or fractions was then evaluated by determining the LC₅₀ using the probit method.

Equation 1. The formula used to calculate the percentage of mortality:

$$\% \text{ of dead larvae} = \frac{\text{Number of dead larvae}}{\text{Total number of initial larvae}} \quad (1)$$

Statistical Analysis

To compare the in vitro anthelmintic effects of *Cassia javanica* L. bark ethanolic extract, the mean times to paralysis and death were first assessed for normality using the

Shapiro–Wilk test. Results showed that most outcome variables significantly deviated from a normal distribution. Additionally, homogeneity of variances was evaluated using Levene’s test, which also indicated violations of the assumption.

Given these results, the nonparametric Kruskal–Wallis H test was employed to determine whether there were statistically significant differences among treatment groups across extract concentrations and controls. This test was used to analyze differences in the time to paralysis and death for both *Ascaris lumbricoides* and *Trichuris trichiura*. A significance level of $p < 0.05$ was used for all statistical tests. Following significant Kruskal–Wallis results, the Dwass–Steel–Critchlow–Fligner (DSCF) test was used as the post hoc procedure to identify pairwise differences among treatment groups.

Percentage mortality observation was used in the Brine Shrimp Motility Assay (BSLA). Since all concentrations showed 100% mortality, the exact LC50 could not be mathematically computed through interpolation or probit regression.

Ethical Consideration

The study primarily involved laboratory-based in vitro experimentation using helminth specimens isolated from stool samples. Although the study was experimental, human participation was necessary only to collect stool specimens containing intestinal parasites for laboratory analysis. No invasive medical procedures, drug administration, or direct clinical interventions were performed on the participants.

The participants involved in the study were malnourished children, who are

considered a vulnerable population. Therefore, additional ethical safeguards were implemented to protect their rights, welfare, privacy, and safety throughout the study. Participation was entirely voluntary, and no child was forced, pressured, or coerced into participating. The researchers ensured that refusal to participate or withdrawal from the study at any stage would not result in any penalty, discrimination, or loss of benefits. This study was reviewed and approved by the appropriate Research Ethics Committee under Ethics Approval No. 2026-005. All research procedures were conducted in accordance with approved ethical guidelines and standards for research involving human participants. Prior to sample collection, the parents or legal guardians of the participants were fully informed about the objectives of the study, the procedures involved, possible risks and potential benefits, confidentiality measures, and the voluntary nature of participation. Informed consent was obtained from the parents or guardians before any sample collection was conducted. In addition, an assent form written in simple, age-appropriate, and understandable language was provided to the children. The researchers carefully explained the study to the child participants, and assent was obtained prior to participation to ensure that the children willingly agreed to participate.

To protect participant confidentiality and privacy, all collected information and specimens were coded with identification numbers rather than participant names. Only the researchers and authorized research personnel had access to the collected data. Stool specimen collection was performed using sterile, properly labeled containers, with instructions provided to parents or guardians on safe collection procedures. All specimen handling, transport, processing, and disposal followed standard biosafety protocols to minimize contamination and

exposure to infectious materials. Biological waste materials used during the laboratory procedures were disposed of in accordance with proper biomedical waste management practices. Solid waste was autoclaved before disposal, and liquid waste was disinfected before disposal; all were disposed of as infectious waste.

The participants and their parents or guardians were not provided with monetary compensation intended to influence or coerce participation in the study. However, after specimen collection was completed, tokens or financial assistance were voluntarily provided as a gesture of appreciation for their cooperation and participation. These were given only after participation and did not affect the participants' freedom to refuse or withdraw from the study at any time without penalty.

Finally, the researchers ensured that the study complied with ethical principles for research involving human participants. Approval from the Institutional Ethics Review Committee was secured for the conduct of sample collection, laboratory experimentation, and data gathering procedures.

RESULTS AND DISCUSSION

In-Vitro Anthelmintic Assay

Table 1 presents the mean times, in minutes, to the onset of paralysis and to confirmed death of *A. lumbricoides* and *T. trichiura* across six treatment groups, each consisting of three replicates. The observation period was fixed at 30 minutes; accordingly, a mean score of 30.00 ± 0.00 indicates that no anthelmintic effect was observed within the allotted time. This ceiling value was observed for both the 1% and 2% concentrations and the negative control across most endpoints, indicating no observable activity at these lower concentrations within the given observation window.

Table 1. Mean Time to Paralysis and Death (in minutes) of *Ascaris lumbricoides* and *Trichuris trichiura* Across Treatment Groups

Treatment Group	Paralysis of <i>A. lumbricoides</i> Mean $\pm$ SD	Death of <i>A. lumbricoides</i> Mean $\pm$ SD	Paralysis of <i>T. trichiura</i> Mean $\pm$ SD	Death of <i>T. trichiura</i> Mean $\pm$ SD	n
1%	30.00 ± 0.00	30.00 ± 0.00	30.00 ± 0.00	30.00 ± 0.00	3
2%	30.00 ± 0.00	30.00 ± 0.00	26.00 ± 1.00	30.00 ± 0.00	3
5%	23.00 ± 1.00	30.00 ± 0.00	17.00 ± 1.00	29.67 ± 0.58	3
10%	13.00 ± 1.00	23.00 ± 2.65	8.67 ± 0.58	11.67 ± 1.53	3
Negative Control	30.00 ± 0.00	30.00 ± 0.00	30.00 ± 0.00	30.00 ± 0.00	3
Positive Control	7.33 ± 0.58	11.33 ± 3.22	5.33 ± 0.58	13.00 ± 1.00	3

Note. SD = standard deviation; n = number of replicates (n = 3 per treatment group); **positive control** = Pyrantel Embonate (200 μ g/mL); **negative control** = normal saline; **30.00 ± 0.00** indicates no observed paralysis or death within the 30-minute observation period.

A clear dose-response pattern is evident across both parasite species. As extract concentration increased from 1% to 10%, mean times to paralysis and death decreased progressively, indicating greater and faster anthelmintic activity at higher concentrations. For *A. lumbricoides*, paralysis was first observed in the 5% group

(Mean = 23.00 ± 1.00 min) and was most rapid in the 10% group (Mean = 13.00 ± 1.00 min). For *T. trichiura*, the effect was even more pronounced, with the 10% group exhibiting the lowest mean paralysis time of 8.67 ± 0.58 minutes, which approached the efficacy of the positive control (Mean = 5.33 ± 0.58 min). This concentration-dependent relationship is consistent with the pharmacological principle that higher concentrations deliver a greater phytochemical load, thereby intensifying interaction with parasite neuromuscular systems (Kumar & Pandey, 2021).

Beyond the observed concentration-dependent effects, differences in susceptibility between the two parasite species were also evident. At equivalent concentrations, *T. trichiura* consistently exhibited a faster onset of paralysis and death than *A. lumbricoides*. This greater sensitivity may be attributed to intrinsic biological differences between the species. As a smaller nematode with a threadlike anterior embedded in the colonic mucosa, *T. trichiura* has a higher surface-area-to-volume ratio, which may facilitate more rapid uptake and action of bioactive compounds. In addition, species-specific differences in membrane composition, acetylcholinesterase isoforms, and neuromuscular architecture may further contribute to the variation in response (Hotez et al., 2020).

This finding is particularly significant in a clinical context, as *T. trichiura* is known to exhibit greater resistance to commonly used anthelmintics, such as albendazole and mebendazole, than *A. lumbricoides* (World Health Organization, 2022). Thus, the comparatively stronger activity of *C. javanica* extract against *T. trichiura* suggests a potentially valuable pharmacological characteristic worthy of further investigation.

Table 2 presents the results of the Kruskal–Wallis H test for all outcome variables. Significant differences were observed among the six treatment groups for all endpoints, including time to paralysis and death in both *A. lumbricoides* and *T. trichiura* ($p < 0.05$). This indicates that at least one treatment group differed significantly from the others in anthelmintic activity, with variation in response across concentrations of the ethanolic extract of *Cassia javanica* L. bark.

Table 2. Kruskal–Wallis H Test Results for Time to Paralysis and Death in *Ascaris Lumbricoides* and *Trichuris trichiura*

Outcome Variable	χ^2	df	p	ϵ^2	Decision
Paralysis – <i>Ascaris lumbricoides</i>	16.80	5	.005	.987	Significant
Death – <i>Ascaris lumbricoides</i>	16.80	5	.005	.988	Significant
Paralysis – <i>Trichuris trichiura</i>	16.70	5	.005	.985	Significant
Death – <i>Trichuris trichiura</i>	15.30	5	.009	.903	Significant

Note. χ^2 = Kruskal–Wallis test statistic; **df** = degrees of freedom; **p** = probability value; ϵ^2 = epsilon-squared effect size; **α** = level of significance (.05). Results were considered significant when **p** < .05.

For *A. lumbricoides*, the test showed significant differences in paralysis time ($\chi^2(5) = 16.80$, $p = .005$) and death time ($\chi^2(5) = 16.80$, $p = .005$), indicating that treatment concentration significantly affected the parasite's response. A similar significant pattern was observed in *T. trichiura*, where paralysis ($\chi^2(5) = 16.70$, $p = .005$) and death times ($\chi^2(5) = 15.30$, $p = .009$) also varied significantly across treatment groups. Overall, lower concentrations (1% and 2%) and the negative control showed little to no anthelmintic activity, whereas higher concentrations (5% and 10%) exhibited progressively faster paralysis and death. The 10% concentration consistently produced the strongest effect across both parasite species, while the positive control exhibited the fastest activity.

These findings are supported by the known bioactivity of *Cassia* species, in which phytochemical constituents such as flavonoids, tannins, and anthraquinones have been reported to disrupt neuromuscular function and induce paralysis and death in helminths through biochemical interference mechanisms (Suleiman et al., 2022). Tannin-rich plant extracts exhibit direct anthelmintic activity by disrupting membrane integrity and reducing parasite motility, leading to paralysis and eventual death. The stronger effect observed at higher extract concentrations therefore likely resulted from increased phytochemical interaction with the worms' biological systems (Sillanpää et al., 2023). Recent studies have shown that plant-derived extracts exert anthelmintic effects in a concentration-dependent manner, with higher doses enhancing the interaction of phytochemicals with parasite biological systems, leading to stronger inhibitory and lethal effects on helminths (Busari et al., 2021).

Several investigations involving other *Cassia* species have demonstrated similar concentration-dependent anthelmintic effects. A study by Kpabi et al. (2022) on *Cassia sieberiana* confirmed that extracts rich in tannins and flavan-3-ol compounds significantly inhibited helminth larval activity. Abdellatif et al. (2023) explained that *Cassia* species contain multiple secondary metabolites that act synergistically to inhibit parasite survival and movement. Because higher concentrations contained greater amounts of these compounds, the extracts produced more rapid paralysis and death, resulting in statistically significant differences across groups. The authors suggested that polyphenolic compounds contribute substantially to the disruption of parasite metabolism and motility. This supports the present findings, in

which increasing concentrations of *Cassia javanica* L. bark extract resulted in progressively shorter paralysis and death times.

The Dwass–Steel–Critchlow–Fligner (DSCF) test was conducted as a post hoc analysis following the significant Kruskal–Wallis results to determine pairwise differences among treatment groups. The results in Table 3 showed that no statistically significant pairwise differences were observed across all outcome variables ($p > 0.05$). This indicates that, although anthelmintic activity varied among treatment concentrations, no pair of groups showed a statistically significant difference in direct comparison.

Table 3. Dwass-Steel-Critchlow-Fligner (DSCF) Pairwise Comparisons for All Outcome Variables

Outcome Variable	Significant Pairwise Comparisons
Paralysis – <i>Ascaris lumbricoides</i>	None
Death – <i>Ascaris lumbricoides</i>	None
Paralysis – <i>Trichuris trichiura</i>	None
Death – <i>Trichuris trichiura</i>	None

Note. DSCF = Dwass–Steel–Critchlow–Fligner post hoc test; **p** = probability value; statistical significance was set at **$\alpha = .05$** .

The absence of statistically significant pairwise differences in the Dwass–Steel–Critchlow–Fligner (DSCF) post hoc test can be attributed to the inherent conservatism of multiple comparison procedures. Post hoc tests such as DSCF adjust for family-wise error rate to reduce the likelihood of Type I error, which consequently increases the probability of Type II error, especially when sample sizes are limited or group differences are gradual rather than abrupt. In this study, although the Kruskal–Wallis test detected a significant overall difference among treatment groups, the post hoc analysis may not have had sufficient statistical power to detect smaller incremental

differences between adjacent concentrations.

The significant Kruskal–Wallis results further support overall differences in treatment effects, despite the absence of significant pairwise differences in the post hoc DSCF test. This pattern is not uncommon in non-parametric analyses, where global tests detect overall distributional differences even when individual group comparisons fail to reach significance due to conservative adjustments in multiple pairwise testing (Dinno, 2015). This suggests that while the general trend of concentration-dependent activity is statistically supported, the magnitude of difference between adjacent concentrations may not be large enough to be detected in pairwise comparisons under stricter error control.

Moreover, the strong significance observed across all outcome variables indicates that both paralysis and death times are consistently influenced by extract concentration, reinforcing the biological consistency of the response across different helminth species. Similar findings have been reported in in vitro anthelmintic studies where overall group differences remain significant despite non-significant pairwise comparisons, particularly when treatment effects follow a gradual dose-response pattern rather than abrupt shifts between concentrations (Calzada et al., 2017). This supports the interpretation that the extract exerts a continuous rather than threshold-dependent pharmacological effect.

These limitations of the DSCF in the present dataset do not invalidate the Kruskal–Wallis omnibus finding. The Kruskal–Wallis test evaluates the global rank distribution across all groups simultaneously and is less sensitive to the specific rank-tie structure that prevents the DSCF pairwise procedure from running. The significant

Kruskal–Wallis result remains valid and indicates that the treatment groups do not share a common rank distribution.

Assessment of Toxicity

Brine Shrimp Lethality Assay

Table 4 presents the results of the brine shrimp lethality assay (BSLA) used to evaluate the cytotoxic potential of the *Cassia javanica* bark ethanolic extract against *Artemia salina nauplii* after 24 hours of exposure. Across all tested concentrations (1.0000 to 0.0313 mg/mL), complete mortality (100%) was observed in all three replicates, with no surviving *nauplii* recorded in any treatment group. This uniform lethality indicates a consistently strong toxic effect of the extract, even at the lowest concentration tested. The negative control (artificial seawater) exhibited 100% survival, confirming that the test conditions were suitable for *nauplii* viability and that mortality in the treatment groups was attributable to the extract rather than environmental factors. The positive control (DMSO) resulted in 100% mortality, demonstrating the assay system's responsiveness and validity.

Table 4. Survival and Mortality of *Artemia salina* nauplii Exposed to *C. javanica* Bark Ethanolic Extract

Concentration (mg/mL)	R1 (Alive/Total)	R2 (Alive/Total)	R3 (Alive/Total)	Mean % Mortality	LC50
1.0000	0/10	0/10	0/10	100.00%	
0.5000	0/10	0/10	0/10	100.00%	
0.2500	0/10	0/10	0/10	100.00%	
0.1250	0/10	0/10	0/10	100.00%	

0.0625	0/10	0/10	0/10	100.00%	LC50 < 1000 µg/mL
0.0313	0/10	0/10	0/10	100.00%	
Negative Control	10/10	10/10	10/10	0.00%	
Positive Control	0/10	0/10	0/10	100.00%	—

Note. R1–R3 = experimental replicates; LC50 = median lethal concentration; 0/10 indicates no surviving nauplii (100% mortality); mortality was assessed after 24 hours of exposure.

Because mortality occurred at all concentrations, the median lethal concentration (LC₅₀) could not be directly estimated using standard dose–response interpolation methods. However, the data clearly indicate that the LC₅₀ lies below the lowest concentration tested (0.0313 mg/mL or 31.3 µg/mL). According to the toxicity classification proposed by Meyer et al. (1982), substances with LC₅₀ values below 1000 µg/mL are considered biologically active or toxic, while those below 100 µg/mL are categorized as highly cytotoxic. Based on this criterion, the *C. javanica* bark extract can be classified as highly cytotoxic.

The observed high lethality may be attributed to bioactive phytochemicals commonly reported in *Cassia* species, including anthraquinones, flavonoids, and tannins, which are known to exert strong cytotoxic and membrane-disruptive effects. Anthraquinones, major constituents of *Cassia* spp., have been reported to induce oxidative stress and mitochondrial dysfunction, leading to apoptosis and cell death in invertebrate models (Khan et al., 2020). Flavonoids, on the other hand, can disrupt cellular membrane integrity and interfere with electron transport systems, resulting in impaired energy metabolism and organismal death (Li & Zhang, 2021). Tannins contribute to toxicity by binding to proteins and enzymes, thereby inhibiting essential

metabolic pathways and causing structural damage to biological membranes (Haslam, 2018).

In addition, studies on plant-derived secondary metabolites have shown that combined phytochemical action often produces synergistic toxicity, where multiple compounds act simultaneously on different cellular targets, amplifying lethal effects in *Artemia salina* nauplii (Gul et al., 2022). Similar findings have been reported in medicinal plant extracts where high total phenolic content correlates strongly with increased brine shrimp lethality due to enhanced pro-oxidant activity under biological conditions (Choi et al., 2019). These mechanisms collectively explain the complete mortality observed across all concentrations in the present study.

While this pronounced cytotoxicity supports the extract's strong biological activity, it also raises important considerations regarding its safety profile. The BSLA is a general toxicity screening tool and does not distinguish between selective toxicity toward parasites and toxicity toward non-target organisms. Therefore, although the extract demonstrates promising pharmacological potential, further evaluation using more specific cytotoxicity assays (e.g., mammalian cell line studies) is necessary to determine its therapeutic safety margin. Overall, the results of the BSLA indicate that the *ethanolic extract of Cassia javanica* bark exhibits potent cytotoxic activity at relatively low concentrations. This finding complements the observed anthelmintic effects but simultaneously underscores the need for careful dose optimization and toxicity profiling in future investigations.

CONCLUSION AND RECOMMENDATION

This study showed that the ethanolic bark extract of *C. javanica L.* has anthelmintic activity against *A. lumbricoides* and *T. trichiura* in a concentration-dependent manner. However, the brine shrimp lethality assay showed 100% mortality in all concentrations, indicating high toxicity. Overall, the extract has potential as a plant-based anthelmintic agent, but further studies are needed to ensure its safety and proper use.

The researchers recommend that future studies further explore the anthelmintic potential of *C. javanica L.* bark extract by testing higher concentrations. It is also recommended to extend the exposure time beyond 30 minutes to better assess the full anthelmintic activity and observe whether prolonged contact enhances parasite mortality. For toxicity assessment, future researchers are advised to use lower concentrations of the extract. Testing at reduced concentrations may help determine a safer threshold at which brine shrimp survival is not completely affected, allowing a more accurate evaluation of its toxicity profile and therapeutic margin. Further in vivo

studies are encouraged to evaluate the safety and effectiveness of the extract in living organisms, along with broader testing across additional parasite species and larger sample sizes to improve the reliability of the results. Collaboration with experts in pharmacology, parasitology, and public health is likewise recommended to support the potential development of this plant as an alternative anthelmintic agent.

DECLARATION OF THE USE OF AI TOOLS

We acknowledge the use of Grammarly [<https://www.grammarly.com>] and ChatGPT [<https://chat.openai.com/>] in the preparation of this research paper.

Grammarly

We entered the following prompt: “Check the grammar, spelling, punctuation, and sentence structure of our paper.”

Use: We used the output to check our paper for errors in grammar, spelling, punctuation, and sentence construction. The suggestions helped us improve the clarity and readability of our writing.

ChatGPT

We entered the prompt: “Help us improve the grammar and wording of this paragraph”

Use: We used the output to help improve some sentences, rephrase unclear statements, and organize parts of the paper. We carefully reviewed the suggestions and made changes as needed before including them in our research paper.

The ideas, data collection, analysis, findings, and conclusions presented in this study are our own work. AI tools were used only to assist in improving the paper's language and presentation.

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APPENDICES

APPENDIX A: Sampling computation

	Treatment	N	Mean	SD	SE
Paralysis_Ascaris	1%	3	30.00	0.000	0.000
	10%	3	13.00	1.000	0.577
	2%	3	30.00	0.000	0.000
	5%	3	23.00	1.000	0.577
	Neg Ctrl	3	30.00	0.000	0.000
	Pos Ctrl	3	7.33	0.577	0.333
Death_Ascaris	1%	3	30.00	0.000	0.000
	10%	3	23.00	2.646	1.528
	2%	3	30.00	0.000	0.000
	5%	3	30.00	0.000	0.000
	Neg Ctrl	3	30.00	0.000	0.000
	Pos Ctrl	3	11.33	3.215	1.856
Paralysis_Trichuris	1%	3	30.00	0.000	0.000
	10%	3	8.67	0.577	0.333
	2%	3	26.00	1.000	0.577
	5%	3	17.00	1.000	0.577
	Neg Ctrl	3	30.00	0.000	0.000
	Pos Ctrl	3	5.33	0.577	0.333
Death_Trichuris	1%	3	30.00	0.000	0.000
	10%	3	11.67	1.528	0.882
	2%	3	30.00	0.000	0.000
	5%	3	29.67	0.577	0.333
	Neg Ctrl	3	30.00	0.000	0.000
	Pos Ctrl	3	13.00	1.000	0.577

**A.1. Raw data for the Average Anthelmintic Activity of *C. javanica* L. bark
ethanolic extract**

APPENDIX A Cont'd

	W	p
Paralysis_Ascaris	0.815	0.003
Death_Ascaris	0.799	0.001
Paralysis_Trichuris	0.915	0.105
Death_Trichuris	0.847	0.008

A.2. Raw Data for the Normality Test (Shapiro-Wilk Test)

APPENDIX A Cont'd

	χ^2	df	p	ϵ^2
Paralysis_Ascaris	16.8	5	0.005	0.987
Death_Ascaris	16.8	5	0.005	0.988
Paralysis_Trichuris	16.7	5	0.005	0.985
Death_Trichuris	15.3	5	0.009	0.903

A.3. Raw Data for the Non-Parametric Test (Kruskal-Wallis H Test)

APPENDIX A Cont'd

		W	p
1%	10%	-2.95	0.294
1%	2%	NaN	NaN
1%	5%	-2.95	0.294
1%	Neg Ctrl	NaN	NaN
1%	Pos Ctrl	-3.00	0.276
10%	2%	2.95	0.294
10%	5%	2.78	0.364
10%	Neg Ctrl	2.95	0.294
10%	Pos Ctrl	-2.82	0.347
2%	5%	-2.95	0.294
2%	Neg Ctrl	NaN	NaN
2%	Pos Ctrl	-3.00	0.276
5%	Neg Ctrl	2.95	0.294
5%	Pos Ctrl	-2.82	0.347
Neg Ctrl	Pos Ctrl	-3.00	0.276

A.5. _____ **Raw**

Data for the Percentage Mortality Observation in the Brine Shrimp Lethality Assay (BSLA)

APPENDIX B. Informed Consent Form



Misamis University

Ozamiz City



MISAMIS UNIVERSITY RESEARCH CENTER

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippine Association of Colleges and Universities Commission on Accreditation (PACUCCA)

MU-RC-042/13 November 2024

Thesis/Research Data Gathering Approval Form

Date: 01-19-26

Name of Authors: Beloy, Bugas, Bulawan, Campacino, Gallardo, Geraldino, Sembrano
College/Department: Medical Technology
Research Title: Evaluation of Anti-Inflammatory, Analgesic and Diuretic Potential of
Cassia javanica Bark in Ozamiz City, Philippines

Data Gathering Procedure:

a. Type of Research: (Kindly check)

☐ Quantitative	☐ Qualitative	☒ Experimental
☐ Approved Research Title & Problem/Objectives	☐ Approved Data Gathering Procedure	☐ Approved Data Gathering Instrument/Data Sheets

b. Respondents/Participants/Subject/Samples to be Collected: _____

c. Procedure:

☐ Survey	☐ Interview	☒ Experimentation	☐ Laboratory Testing
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d. Place of Implementation/Study Area: Plant

If to be conducted outside the school campus, indicate the nature of transportation to be used:

☐ Own private vehicle	☒ public utility vehicle	☐ rental	☐ Others, please indicate _____
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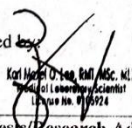
e. Date/s of Implementation/Sampling: January-April 2026

Attachments:

☐ Approved Letter of Consent from the designated authority in the area/place where the study is to be conducted
☐ Signed Parents' Consent

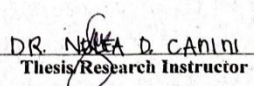
The thesis proposal mentioned above is hereby recommended for the commencement of data gathering implementation.

Recommended by:

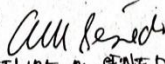


Karl Mark D. Tan, RMT, MSc, MEd
Medical Laboratory Scientist
License No. 915924

Thesis/Research Adviser



DR. NELIA D. CANINA
Thesis/Research Instructor

Approved by: 
EVANGELINE M. SENEOD, RMT, MATMRS
College Dean

CONTROLLED DOCUMENT

APPENDIX C. Approved Letter of Consent

	MISAMIS UNIVERSITY Ozamiz City Department of Student Affairs & Services
MU-DSAS-006/02June2023	

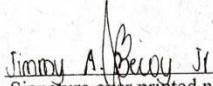
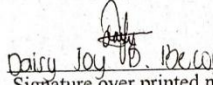
PARENT'S CONSENT

Sponsoring Group/Organization _____

I am allowing my son/daughter/ward, Dairy Jay D. Becoy, to join the Research Data Gathering (activity) to be held on January 2026 at Misamis University under the supervision of Mr. Karl Maxel D. Lao (Adviser/Faculty).

I understand that Misamis University exercises the necessary safety precautions in this activity.

In consideration of the benefits to be derived from the above activity, I expressly waive any and all claims against the administration or any member of the faculty and staff of the Misamis University on account of any unforeseen accident or injury that my son/daughter/ward might incur in connection with the aforementioned activity.

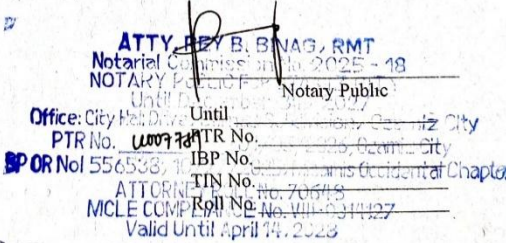
 Signature over printed name of Parent/Guardian	<u>12/15/25</u> Date
 Signature over printed name of Student	<u>12/15/25</u> Date

Important: This form shall be submitted to the DSAS Office at least two (2) days before the conduct of the activity.

.....

SUBSCRIBED AND SWORN to before me, this 05 JAN 2026 at Ozamiz City, Philippines, that the herein affiant personally came and appeared with his/her _____, as evidence of his/her personal identity.

Doc. No. 318
Page No. 6
Book No. VII
Series of 20 24



ATTY. REY B. BINAG, RMT
Notary Public
Notary Commission No. 2025-18
Office: City Hall Drive, Ozamiz City
PTR No. 0007181 TR No. _____
IBP No. _____
TIN No. _____
MILE COMPL. No. 70645
Valid Until April 14, 2028

(For DSAS Personnel only)

Attested by:


RODEL L. BALDADO, MHist, MAEd
OIC, Department of Student Affairs & Services
Date: 1/22/2026

APPENNDIX C Cont'd



MISAMIS UNIVERSITY
Ozamiz City
Department of Student Affairs & Services

MU-DSAS-006/02June2023

PARENT'S CONSENT

Sponsoring Group/Organization

I am allowing my son/daughter/ward, Rianne Jane P. Bugas, to join the Research data gathering (activity) to be held on January 2026 at Misamis University under the supervision of Mr. Karl Maxel O. Lao (Adviser/Faculty).

I understand that Misamis University exercises the necessary safety precautions in this activity.

In consideration of the benefits to be derived from the above activity, I expressly waive any and all claims against the administration or any member of the faculty and staff of the Misamis University on account of any unforeseen accident or injury that my son/daughter/ward might incur in connection with the aforementioned activity.

Analya P. Bangas
Signature over printed name of
Parent/Guardian

January 4, 2025
Date

Rianne Jane P. Bugas
Signature over printed name of
Student

January 5, 2025
Date

Important: This form shall be submitted to the DSAS Office at least two (2) days before the conduct of the activity.

SUBSCRIBED AND SWORN to before me, this 05 JAN 2025 at Ozamiz City, Philippines, that the herein affiant personally came and appeared with his/her _____, as evidence of his/her personal identity.

Doc. No. 921
Page No. 64
Book No. VII
Series of 20 24

ATTY. REY B. BANT
Notarized Commission No. 19
NOTARY PUBLIC
Office: City Hall, Ozamiz City
PTR No. 100-100-100 IBP No. 100-100-100 Chapter 100
ATTORNEY'S REGISTRATION No. 100-100-100
MCLE C/Roll No. 100-100-100
Valid Until April 14, 2025

(For DSAS Personnel only)

Attested by:

RODEL L. BALDADO, MHist, MAEd
OIC, Department of Student Affairs & Services
Date: 4/22/2026

APPENNDIX C Cont'd



MISAMIS UNIVERSITY
Ozamiz City
Department of Student Affairs & Services

MU-DSAS-006/02June2023

PARENT'S CONSENT

Sponsoring Group/Organization

I am allowing my son/daughter/ward, KC M. Bulawan, to join
the Research Data gathering (activity) to be held on
JANUARY 2026 at Misamis University under the supervision of
Mr. Karl Maxel O. Lao (Adviser/Faculty).

I understand that Misamis University exercises the necessary safety precautions in this activity.

In consideration of the benefits to be derived from the above activity, I expressly waive any and all
claims against the administration or any member of the faculty and staff of the Misamis University on
account of any unforeseen accident or injury that my son/daughter/ward might incur in connection with
the aforementioned activity.

MARCHAKIA M. BULAWAN

Signature over printed name of
Parent/Guardian

Dec 15, 2025

Date

KC M. Bulawan

Signature over printed name of
Student

Dec. 15, 2025

Date

Important: This form shall be submitted to the DSAS Office at least two (2) days before the conduct of the activity.

SUBSCRIBED AND SWORN to before me, this 05 JAN 2026 day of Ozamiz City,
Philippines, that the herein affiant personally came and appeared with his/her _____,
his/her personal identity.

Doc. No. 317
Page No. 6
Book No. VII
Series of 20 26

ATTY. DEY B. BINAG, RMT
Notarial Commission No. 2425-18
NOTARY PUBLIC
Until: _____
Notary Public

Office: City Hall Drive, Ozamiz City
PTR No. 60078
IBP No. 60078
SPOR No. 556538
TIN No. 60078
MCLE COMPLIANCE No. 0011127
Valid Until April 14, 2026

(For DSAS Personnel only)

Attested by:

RODEL L. BALDADO, MHist, MAEd

OIC, Department of Student Affairs & Services

Date: 1/22/2026

APPENNDIX C Cont'd



MISAMIS UNIVERSITY
Ozamiz City
Department of Student Affairs & Services

MU-DSAS-006/02June2023

PARENT'S CONSENT

Sponsoring Group/Organization

I am allowing my son/daughter/ward, KRISTA MAE A. CAMPECINO, to join the RESEARCH DATA GATHERING (activity) to be held on JANUARY 2026 at MISAMIS UNIVERSITY under the supervision of MR. KARL MAXEL O. LAD (Adviser/Faculty).

I understand that Misamis University exercises the necessary safety precautions in this activity.

In consideration of the benefits to be derived from the above activity, I expressly waive any and all claims against the administration or any member of the faculty and staff of the Misamis University on account of any unforeseen accident or injury that my son/daughter/ward might incur in connection with the aforementioned activity.

NONITA CAMPECINO
Signature over printed name of
Parent/Guardian

12/15/25
Date

CAMPECINO, KRISTA MAE A.
Signature over printed name of
Student

12/15/25
Date

Important: This form shall be submitted to the DSAS Office at least two (2) days before the conduct of the activity.

SUBSCRIBED AND SWORN to before me, this 05 JAN 2026 day of January at Ozamiz City, Philippines, that the herein affiant personally came and appeared with his/her _____, as evidence of his/her personal identity.

Doc. No. 322
Page No. 666
Book No. VII
Series of 20 26

ATTY. JAY B. LINDO, JAT
Notarial Commission No. 2015-10
NOTARY PUBLIC
Office: City Ozamiz
PTR No. 1000000000
IBP No. 1000000000
TIN No. 1000000000
Roll No. 1000000000
Valid Until April 2027

(For DSAS Personnel only)

Attested by:

RODEL L. BALDADO, MHist, MAEd
OIC, Department of Student Affairs & Services

Date: 9/22/2026

APPENNDIX C Cont'd



MISAMIS UNIVERSITY

Ozamiz City

Department of Student Affairs & Services

MU-DSAS-006/02June2023

PARENT'S CONSENT

Sponsoring Group/Organization

I am allowing my son/daughter/ward, Jeannie Rose C. Gallardo, to join
the Research Data Gathering (activity) to be held on
January 2020 at Misamis University under the supervision of
Mr. Karl Maxel O. Lao (Adviser/Faculty).

I understand that Misamis University exercises the necessary safety precautions in this activity.

In consideration of the benefits to be derived from the above activity, I expressly waive any and all claims against the administration or any member of the faculty and staff of the Misamis University on account of any unforeseen accident or injury that my son/daughter/ward might incur in connection with the aforementioned activity.

GARCIA, WILMA C.
Signature over printed name of
Parent/Guardian

Dec. 93, 2025
Date


Signature over printed name of
Student

Dec. 15, 2025
Date

Important: This form shall be submitted to the DSAS Office at least two (2) days before the conduct of the activity.

SUBSCRIBED AND SWORN to before me, this 05 JAN 2020 day of January at Ozamiz City, Philippines, that the herein affiant personally came and appeared with his/her [Signature] as evidence of his/her personal identity.

ATTY. JAY S. MAGSAYSAY

Doc. No. 319
Page No. 65
Book No. VII
Series of 20 26

ATTY. RAY S. BINAG
 Notary Public
 Notary Public
 Office: City Hall
 PTR No. 556538
 IBP No.
 TIN No.
 Roll No.
 Val.

(For DSAS Personnel only)

Attested by:

RODEL L. BALDADO, MHist, MAEd
OIC, Department of Student Affairs & Services

Date: 1/22/2026

APPENDIX C Cont'd



MISAMIS UNIVERSITY
Ozamiz City
Department of Student Affairs & Services

MU-DSAS-006/02June2023

PARENT'S CONSENT

Sponsoring Group/Organization

I am allowing my son/daughter/ward, Janyl lean M. Geraldito, to join the Research Data Gathering (activity) to be held on January 2026 at Misamis University under the supervision of Mr. Karl Maxel O. Lao (Adviser/Faculty).

I understand that Misamis University exercises the necessary safety precautions in this activity.

In consideration of the benefits to be derived from the above activity, I expressly waive any and all claims against the administration or any member of the faculty and staff of the Misamis University on account of any unforeseen accident or injury that my son/daughter/ward might incur in connection with the aforementioned activity.

ANITA V. MDEAN
Signature over printed name of
Parent/Guardian

12-15-25
Date

JANYL LEAN M. GERALDITO
Signature over printed name of
Student

12-15-25
Date

Important: This form shall be submitted to the DSAS Office at least two (2) days before the conduct of the activity.

SUBSCRIBED AND SWORN to before me, this 05 January 2026 at Ozamiz City, Philippines, that the herein affiant personally came and appeared with his/her _____ as evidence of his/her personal identity.

Doc. No. 320
Page No. 64
Book No. VII
Series of 20 20

ATTY. ROLAND P. BALDADO, BNT
Notarial Commission No. 2025-19
NOTARY PUBLIC
Office: City Hall, Ozamiz City
PTR No. 0007781
IBP No. _____
TIN No. _____
MCLE Roll No. 0011127
Valid Until April 14, 2023

(For DSAS Personnel only)

Attested by:

RODEL L. BALDADO, MHist, MAEd
OIC, Department of Student Affairs & Services

Date: 4/22/2026

APPENDIX C Cont'd



MISAMIS UNIVERSITY
Ozamiz City
Department of Student Affairs & Services

MU-DSAS-006/02June2023

PARENT'S CONSENT

Sponsoring Group/Organization

I am allowing my son/daughter/ward, Nicole Faith A. Sembrano, to join the Research Data gathering (activity) to be held on January, 2026 at Misamis University under the supervision of Mr. Karl Maxel O. Lao (Adviser/Faculty).

I understand that Misamis University exercises the necessary safety precautions in this activity.

In consideration of the benefits to be derived from the above activity, I expressly waive any and all claims against the administration or any member of the faculty and staff of the Misamis University on account of any unforeseen accident or injury that my son/daughter/ward might incur in connection with the aforementioned activity.

SEMPRANO, ANGEL A.
Signature over printed name of
Parent/Guardian

December 15, 2025
Date

SEMPRANO, NICOLE FAITH A.
Signature over printed name of
Student

December 15, 2025
Date

Important: This form shall be submitted to the DSAS Office at least two (2) days before the conduct of the activity.

SUBSCRIBED AND SWORN to before me, this 05 JAN 2026 day of Ozamiz City Philippines, that the herein affiant personally came and appeared with his/her _____, as evidence of his/her personal identity.

Doc. No. 9/6
Page No. 67
Book No. VII
Series of 20 26

ATTY. REY B. BINAG, RMT
Notarial Commission No. 20029648
NOTARY PUBLIC FOR NOTARY PUBLIC
Until April 31, 2027
Office: City Hall Drive, PTR No. 100711, Ozamiz City, Negros Occidental
PTR No. 100711 IBP No. 100711
SP OR Not. 100711 TIN No. 100711
ATTORNEY RMT No. 100711
MICEL COMMISSION NO. 100711
SW. 100711 MP45 2026
ATTY. REY B. BINAG, RMT

(For DSAS Personnel only)

Attested by:

RODEL I. BALDADO, MHist, MAEd
OIC, Department of Student Affairs & Services

Date: 1/22/2026

APPENNDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

April 22, 2026

Misamis University
College of Medical Technology
H.T. Feliciano St., Ozamiz City 7200 Philippines

Good day!

We are a group of students currently conducting a research study entitled "Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines."

In line with our study, we respectfully request permission to go to Naawan to conduct cytotoxicity testing as part of our research procedures. This activity is essential to evaluate the potential biological effects of our plant extract.

We assure you that all procedures will be conducted responsibly, ethically, and in accordance with proper laboratory guidelines and safety protocols. We will strictly adhere to any rules and requirements set by your office.

We are willing to comply with any necessary documentation or permits that may be required for this activity. We are hoping for your kind consideration and approval of our request. Thank you very much, and we look forward to your favorable response.

Respectfully yours,

Daisy Joy D. Becov
Researcher

Roanna Jane P. Bugas
Researcher

Kc M. Bulawan
Researcher

Krizza Mae A. Campeño
Researcher

Jeannette Rose C. Gallardo
Researcher

Janvi Lean M. Geraldizo
Researcher

Nicole Faith A. Sembrano
Researcher

Endorsed by:

KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University

Noted by:

EVANGELINE M. SEÑO, RMT, MATMRS
Dean, College of Medical Technology

APPENNDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

April 22, 2026

Misamis University
College of Medical Technology
H.T. Feliciano St., Ozamiz City 7200 Philippines

Good day!

We are a group of researchers kindly informing you that we will be going to Mindanao State University-Iligan Institute of Technology (MSU-IIT) to obtain plant extract samples for our research study entitled "Evaluation of the In Vitro Antihelminthic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines."

These samples will be used for our laboratory work focusing on the antihelminthic activity and cytotoxicity of the plant extract as part of our study. We assure you that all proper guidelines and procedures will be carefully followed throughout the process.

Thank you very much for your kind consideration and support.

Respectfully yours,


Daisy Joy D. Becoy
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher

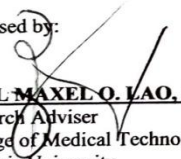

Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janvi Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher

Endorsed by:


KARL MAXEL O. LIAO, RMT, MSc, MLS
Research Adviser
College of Medical Technology
Misamis University

Noted by:


EVANGELINE M. SENEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENNDIX C Cont'd



Misamis University

Ozamiz City

COLLEGE OF MEDICAL TECHNOLOGY



CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

April 22, 2026

Misamis University
College of Medical Technology
H.T. Feliciano St., Ozamiz City 7200 Philippines

Good day!

We hope this message finds you well. We are a group of researchers respectfully informing you that we will be conducting the collection of stool samples as part of our research study entitled "Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines."

The collected samples will be used strictly for laboratory analysis in relation to the objectives of our study, particularly for the evaluation of anthelmintic activity. We assure that all proper ethical guidelines, safety protocols, and standard procedures will be carefully observed throughout the process.

Thank you very much for your kind consideration and support.

Respectfully yours,


Daisy Joy D. Becov
Researcher


Roanne Jane P. Bugas
Researcher


Ke M. Bulawan
Researcher

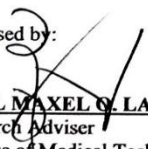

Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher

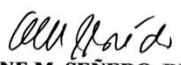

Janyl Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher

Endorsed by:


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University

Noted by:


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENNDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

April 22, 2026

Misamis University
College of Medical Technology
H.T. Feliciano St., Ozamiz City 7200 Philippines

Good day!

We are a group of researchers kindly informing you that we will be going to Mindanao State University Iligan Institute of Technology (MSU-IIT) for the purpose of plant specimen identification, specifically for *Cassia javanica*.

This is in relation to our research study entitled "Evaluation of the In Vitro Antihelminthic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines." The proper identification of the plant specimen is an essential part of ensuring the accuracy and reliability of our study.

We assure you that all proper guidelines and procedures will be followed during this process. Thank you very much for your kind consideration and support.

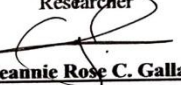
Respectfully yours,


Daisy Joy D. Becoy
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher


Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janvi Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher

Endorsed by:


KARL MAREL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University

Noted by:


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd



Misamis University

Ozamiz City



MISAMIS UNIVERSITY RESEARCH CENTER

CERTIFIED: ISO 21001: 2016 Educational Organizations Management System by DNV

ACCREDITED: Philippine Association of Colleges and Universities Commission on Accreditation (PACUOCA)

MU-RC-043/19 August 2023

ADVISER'S CONSULTATION FORM

NAME OF THE ADVISER: Mr. Karl Daniel O. Lino

TITLE OF THE STUDY: Evaluation of Antihypertensive Potential of Locally Sourced Peppermint (Mentha piperita) Leafy in Ozamiz City, Philippines

NAME OF PROPONENTS: Daisy Joy D. Deo, Eunice Jane P. Byrre, Jc M. Bulawan, Virginia Mae A. Campesino, Jemarie Rose C. Lantardo, Jany Leon M. Connelingo, Nicole Faith A. Sembrano

Date of Consultation	Purpose	Adviser's Comments	Adviser's Signature
Aug. 11, 2023	Title consultation	Title should elaborate what ethanolic or methanolic, n-hexane, compound will be used	
Sept. 9, 2023	Title consultation	Peppermint and Peppermint should be in scientific form, specify extract and specify what other extract	
Sept. 10, 2023	Title consultation	Title approved	
Sept. 25, 2023	Research methodology	Specify area where to get sample, ethical considerations, elaborate sketch how to do it	
Oct. 12, 2023	Title consultation	Change title, change everything	
Oct. 16, 2023	Paper revision consult	specify should be 1.0, if not use phytochemistry is available in SPC lab	
Oct. 24, 2023	Paper revision consult	specify in vivo studies, specify what testing in SPC, equation in statistical analysis	
Nov. 3, 2023	Paper revision consult	change of test, new title	

*There must be at least 5 consultations before the proposal defense and at least 5 consultations before final defense.

CONTROLLED DOCUMENT

APPENDIX C Cont'd



Misamis University

Ozamiz City

MISAMIS UNIVERSITY RESEARCH CENTER

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippine Association of Colleges and Universities Commission on Accreditation (PACUOCA)

MU-RC-043/19 August 2025

ADVISER'S CONSULTATION FORM

NAME OF THE ADVISER: Mr. Karl Maxel O. Lao

TITLE OF THE STUDY: Evaluation of the In Vitro Anthelmintic Activity and Toxicity of Balayong (Cassia javanica L.) Bark Ethanolic Extracts in Oremiz City, Philippines

NAME OF PROPONENTS: Becoy, Daisy Joy D., Bugas, Roanne Jane P., Bulawan, KC M., Campeño, Krizza Mae A., Gallardo, Jeanne Rose C., Geraldito, Janu!, Lean M., Sembrano, Nicole Faith A.

[illegible]

**There must be at least 5 consultations before the proposal defense and at least 5 consultations before final defense.*

CONTROLLED DOCUMENT

APPENDIX C Cont'd



Misamis University
H. T. Feliciano St., Ozamiz City, 7200 Philippines
MISAMIS UNIVERSITY RESEARCH ETHICS COMMITTEE
Phone: +6388 521 0367 | Fax: +6388 521 2917
Email: muresearchethics@mu.edu.ph

MU-REB-001/03 March 2022

May 7, 2026 2026

MS. DAISY JOY D. BECOY
MS. ROANNE JANE P. BUGAS
MS. KC M. BULAWAN
MS. KRIZZA MAE A. CAMPECINO
MS. JEANNIE ROSE C. GALLARDO
MS. JANYL LEAN M. GERALDIZO
MS. NICOLE FAITH A. SEMBRANO
Principal Investigators

MUREC-UNDERGRAD Code 2026-005

**EVALUATION OF THE IN-VITRO ANTIHELMENTHIC ACTIVITY AND
CYTOTOXICITY OF (*Cassia javanica* L.) BARK ETHANOLIC EXTRACTS IN
OZAMIZ CUTY, PHILIPPINES**

Dear Investigators:

After careful review of your research protocol, the MU Research Ethics Committee (MUREC) has determined that the study poses **minimal risk** to the research participants. The Committee is therefore pleased to **grant ethical approval**, subject to compliance with the recommendations outlined below. You may proceed with data collection once these recommendations have been appropriately addressed.

The following are the recommendations based on the Committee's review:

In general

- All scientific names in the manuscript **MUST** be in italics.

Ethical Considerations

- The ethical consideration section is insufficient and requires substantial revision to address the involvement of minors and other vulnerable participants appropriately.
- The study title indicates an *in vitro* anthelmintic and cytotoxicity evaluation; however, the ethical consideration section mentions malnourished children as respondents. Clarify the specific role of the children in the study and explain why their participation is necessary.
- If the study is purely laboratory-based (*in vitro*), justify the inclusion of human participants. Clearly indicate whether biological samples, clinical records, or direct participant interaction will be involved.
- Malnourished children are considered a vulnerable population. Include additional safeguards to protect participants from coercion, exploitation, discomfort, or psychological distress during the study.

APPENDIX C Cont'd



Misamis University

H. T. Feliciano St., Ozamiz City, 7200 Philippines

MISAMIS UNIVERSITY RESEARCH ETHICS COMMITTEE

Phone: +6388 521 0367 | Fax: +6388 521 2917

Email: muresearchethics@mu.edu.ph

- In addition to parental informed consent, prepare and attach a separate Assent Form written in age-appropriate and understandable language. Clearly describe how child assent will be obtained and documented prior to participation.
- Explicitly state that participants and their parents/guardians will be informed of the study's objectives, procedures, potential risks, potential benefits, and their right to withdraw at any time without penalty.
- Describe the measures that will be implemented to ensure confidentiality and privacy of participant information, including data coding, storage, access limitation, and disposal procedures.
- If biological specimens such as stool, will be collected, clearly describe the collection procedures, biosafety protocols, and proper disposal methods for biological waste materials.
- Specify that all sample collection procedures involving children will be performed or supervised by qualified healthcare professionals to ensure participant safety and ethical compliance.
- Include a statement indicating that the study will secure approval from the appropriate Institutional Ethics Review Committee prior to data collection and experimentation.
- Clarify whether participants will receive compensation, incentives, treatment referral, or any form of assistance related to the study, and ensure that these do not create undue influence or coercion.
- Revise the ethical consideration section to ensure consistency between the study title, methodology, participant involvement, and experimental procedures.

Sincerely yours,

YUNALYN D. VILLANTES, PhD
Chair, MUREC

CERTIFICATION OF STATISTICAL TREATMENT

Research Title: EVALUATION OF THE IN VITRO ANTHELMENTIC ACTIVITY AND TOXICITY OF BALAYONG (CASSIA JAVANICA L.) BARK ETHANOLIC EXTRACTS IN OZAMIZ CITY, PHILIPPINES

Research Authors: BECOY, DAISY JOY D.
BUGAS, ROANNE JANE P.
BULAWAN, KC M.
CAMPECIÑO, KRIZZA MAE A.
GALLARDO, JEANNIE ROSE C.
GERALDIZO, JANYL LEAN M.
SEMBRANO, NICOLE FAITH A.

This is to certify that the data presented in the above-mentioned study conducted at Misamis University H.T. Feliciano St., Ozamiz City 7200 Philippines, were subjected to appropriate statistical treatment. All responses gathered were processed, analyzed, and interpreted using established statistical procedures deemed suitable for the nature and objectives of the research.

The application of statistical methods was conducted with diligence and objectivity, ensuring the accuracy and reliability of the results presented. The treatment of data adhered to recognized standards of academic and research integrity.

Issued this 7th day of May, 2026.


ALYSSA BIANCA B. AGUILAR, LPT
Statistics Practitioner

APPENDIX C Cont'd

CERTIFICATION OF IDENTIFICATION AND AUTHENTICATION OF BOTANICAL SPECIMENS

I, hereby certify these plant specimens below based on the examined specimen and given photographs upon request of **Daisy Joy D. Becoy, Roanne Jane P. Bugas, KC M. Bulawan, Krizza Mae A. Campeciño, Jeannie Rose C. Gallardo, Janyl Lean M. Geraldizo, Nicole Faith A. Sembrano**, undergraduate students of Misamis University for the purpose of research studies as requirement for her undergraduate program.

Given this 16th day of May, 2026 at MSU-Iligan Institute of Technology, Andres Bonifacio Ave., Tibanga, Iligan City, Philippines.

Specimen No: 1	
Kingdom:	Plantae
Phylum:	Tracheophyta
Class:	Magnoliopsida
Order:	Fabales
Family:	Fabaceae
Genus:	<i>Cassia</i> L.
Species:	<i>Cassia javanica</i> ssp. <i>javanica</i> L.
Common Name:	Antsoan, Apostola, Balayong

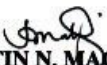
References: (1) Global Biodiversity Information Facility (<https://www.gbif.org/species/2771287>)
(2) Pelsner, P.B., J.F. Barcelona & D.L. Nickrent (eds.). 2011 onwards. Co's Digital Flora of the Philippines. www.philippineplants.org

Identifier: For. Justin N. Maceda

Identifier email: justin.maceda@g.msuiit.edu.ph

Identification Method: Specimen were identified on phyllotaxy, leaf morphology, habits, reproductive organs, and distribution range available of online references.

Certified by:


JUSTIN N. MACEDA, RPF
Registered Forester
Mindanao State University- Iligan Institute of Technology

APPENDIX C Cont'd

Turnitin Result



Page 2 of 50 - Integrity Overview

Submission ID: trnoid::28447:143979400

19% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

▸ Bibliography

Match Groups

-  **117 Not Cited or Quoted 16%**
Matches with neither in-text citation nor quotation marks
-  **22 Missing Quotations 3%**
Matches that are still very similar to source material
-  **1 Missing Citation 0%**
Matches that have quotation marks, but no in-text citation
-  **0 Cited and Quoted 0%**
Matches with in-text citation present, but no quotation marks

Top Sources

- 9%  Internet sources
- 7%  Publications
- 16%  Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

APPENDIX C Cont'd

Grammarly Report

General metrics

57,377

characters

7,980

words

644

sentences

31 min 55 sec

reading
time

1 hr 1 min

speaking
time

Writing Issues



No issues found

Plagiarism

This text hasn't been checked for plagiarism

Unique Words

Measures vocabulary diversity by calculating the percentage of words used only once in your document

21%

unique words

Rare Words

Measures depth of vocabulary by identifying words that are not among the 5,000 most common English words.

44%

rare words

Word Length

Measures average word length

5.5

characters per word

Sentence Length

Measures average sentence length

12.4

words per sentence

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

ETHICS INFORMED ASSENT FORM

(Informed Assent Form for minors or children below 18 years old)

Informed Consent Form for John Peter L. Gomez
Name of the Researcher(s): Benny Bernal, Bulawan, Galarza, Galarza, Galarza, Galarza
Institution: Misamis University

INTRODUCTION:

We are 3rd Year Medical Technology students from Misamis University currently conducting a research study entitled "Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines."

We are inviting you to participate in this study involving stool sample collection for research purposes. Your participation is completely voluntary. Before deciding whether to participate or not, you may take enough time to think carefully and discuss it with your parents, guardian, family, or friends.

If there are words, procedures, or concepts that you do not understand, the researchers will gladly explain them clearly. You are free to ask questions at any time before, during, or after the study. Choosing not to participate will not result in any penalty or loss of benefits to which you are entitled.

You are invited to participate in a research study conducted by Benny Bernal, Bulawan, Galarza, Galarza, Galarza, Galarza because you fit the inclusion criteria for informants of our study.

Your participation is completely voluntary. Please read the information below and ask questions about anything you do not understand before deciding whether to participate. You may discuss your participation with your parents, guardian, family, or friends before making your decision. If you decide to participate, you will be asked to sign this form. You will be given a copy of this form.

PURPOSE OF THE STUDY:

The purpose of this study is to collect and examine stool samples to help researchers identify the presence of microorganisms, parasites, or other factors related to health and disease. The study aims to improve understanding of gastrointestinal health and contribute to future medical research and public health programs.

STUDY PROCEDURES:

If you agree to participate, you will be asked to provide a stool sample using a sterile container provided by the researchers. Instructions for proper collection will be explained before the procedure. The sample may be collected at home or at an approved collection area and returned to the researchers afterward.

You may also be asked to answer a short health-related questionnaire. You may skip any question you do not wish to answer and may stop participating at any time without penalty.

All information and samples collected will be kept confidential and used only for research purposes.

DURATION

Participation in this study will take approximately 10-20 minutes, including instructions, questionnaire completion (if applicable), and stool sample collection.

APPENDIX C Cont'd



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Ozamiz City



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III. POTENTIAL RISKS AND DISCOMFORTS

- You may feel slight discomfort or embarrassment during stool collection.
- There are no expected physical risks since the procedure is non-invasive.
- You may choose not to answer any question or withdraw at any time if you feel uncomfortable.

IV. POTENTIAL BENEFITS

- There may be no direct benefit to you.
- However, your participation may help in discovering potential plant-based treatments for parasitic infections and contribute to scientific knowledge.

V. CONFIDENTIALITY

- All information and samples collected will be kept strictly confidential.
- Your identity will not be disclosed in any report or publication.
- Data will be coded and used only for research purposes.

VI. VOLUNTARY PARTICIPATION AND WITHDRAWAL

- Your participation is entirely voluntary.
- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:

Researchers: Beryl Bugad, B. Alanan, Christopher Comodoro, Gerardo, Sebastian

Institution: Misamis University

Contact Number: 09241590467

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: John Peter L. Gonsz

Signature: [Signature]

Date: April 24, 2020

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____

Date: _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: K. M. Bulanda

Signature: [Signature]

Date: April 24, 2020

APPENDIX C Cont'd



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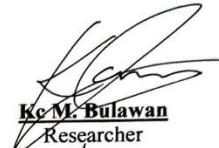
STOOL SAMPLE COLLECTION INSTRUCTIONS

1. Use the sterile container provided.
2. Avoid mixing stool with urine or water.
3. Collect a small portion of stool (about the size of a thumb).
4. Securely close the container.
5. Label the sample properly.
6. Submit the sample immediately as instructed.

Thank you for your participation.


Daisy Joy D. Becoy
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher


Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janyl Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd



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ETHICS INFORMED ASSENT FORM

(Informed Assent Form for minors or children below 18 years old)

Informed Consent Form for: Gerason Aldrich L. Gomez
Name of the Researcher(s): Gerason Aldrich L. Gomez, Bryan Pulvaran, Camille B. Bernaldo, Geraldine, Samson
Institution: Misamis University

INTRODUCTION:

We are 3rd Year Medical Technology students from Misamis University currently conducting a research study entitled "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines.**"

We are inviting you to participate in this study involving stool sample collection for research purposes. Your participation is completely voluntary. Before deciding whether to participate or not, you may take enough time to think carefully and discuss it with your parents, guardian, family, or friends.

If there are words, procedures, or concepts that you do not understand, the researchers will gladly explain them clearly. You are free to ask questions at any time before, during, or after the study. Choosing not to participate will not result in any penalty or loss of benefits to which you are entitled.

You are invited to participate in a research study conducted by Gerason Aldrich L. Gomez, Bryan Pulvaran, Camille B. Bernaldo, Geraldine, Samson because you fit the inclusion criteria for informants of our study.

Your participation is completely voluntary. Please read the information below and ask questions about anything you do not understand before deciding whether to participate. You may discuss your participation with your parents, guardian, family, or friends before making your decision. If you decide to participate, you will be asked to sign this form. You will be given a copy of this form.

PURPOSE OF THE STUDY:

The purpose of this study is to collect and examine stool samples to help researchers identify the presence of microorganisms, parasites, or other factors related to health and disease. The study aims to improve understanding of gastrointestinal health and contribute to future medical research and public health programs.

STUDY PROCEDURES:

If you agree to participate, you will be asked to provide a stool sample using a sterile container provided by the researchers. Instructions for proper collection will be explained before the procedure. The sample may be collected at home or at an approved collection area and returned to the researchers afterward.

You may also be asked to answer a short health-related questionnaire. You may skip any question you do not wish to answer and may stop participating at any time without penalty.

All information and samples collected will be kept confidential and used only for research purposes.

DURATION

Participation in this study will take approximately 10-20 minutes, including instructions, questionnaire completion (if applicable), and stool sample collection.

APPENDIX C Cont'd



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ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

III. POTENTIAL RISKS AND DISCOMFORTS

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- You may choose not to answer any question or withdraw at any time if you feel uncomfortable.

IV. POTENTIAL BENEFITS

- There may be no direct benefit to you.
- However, your participation may help in discovering potential plant-based treatments for parasitic infections and contribute to scientific knowledge.

V. CONFIDENTIALITY

- All information and samples collected will be kept strictly confidential.
- Your identity will not be disclosed in any report or publication.
- Data will be coded and used only for research purposes.

VI. VOLUNTARY PARTICIPATION AND WITHDRAWAL

- Your participation is entirely voluntary.
- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:

Researchers: Buffy, Buge, Bulawan, Cansapina, Calanday, Cardado, Jr., Smith, Jr.

Institution: Misamis University

Contact Number: 69271790465

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: Gerzon Adrich L. Gomez

Signature: [Signature]

Date: April 24, 2024

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____

Date: _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: KC M. Bulawan

Signature: [Signature]

Date: April 24, 2024

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

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STOOL SAMPLE COLLECTION INSTRUCTIONS

1. Use the sterile container provided.
2. Avoid mixing stool with urine or water.
3. Collect a small portion of stool (about the size of a thumb).
4. Securely close the container.
5. Label the sample properly.
6. Submit the sample immediately as instructed.

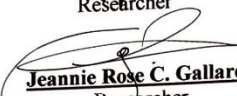
Thank you for your participation.

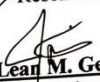

Daisy Joy D. Becov
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher


Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janvi Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd



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Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

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ACCREDITED: Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA)

ETHICS INFORMED ASSENT FORM

(Informed Assent Form for minors or children below 18 years old)

Informed Consent Form for: Spil Anne W. Ozamiz
Name of the Researcher(s): Becay, Bugas, Bulawan, Campeño, Gallardo, Geraldine, Sembrano
Institution: Misamis University

INTRODUCTION:

We are 3rd Year Medical Technology students from Misamis University currently conducting a research study entitled "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia Javanica* Bark Ethanollic Extracts in Ozamiz City, Philippines.**"

We are inviting you to participate in this study involving stool sample collection for research purposes. Your participation is completely voluntary. Before deciding whether to participate or not, you may take enough time to think carefully and discuss it with your parents, guardian, family, or friends.

If there are words, procedures, or concepts that you do not understand, the researchers will gladly explain them clearly. You are free to ask questions at any time before, during, or after the study. Choosing not to participate will not result in any penalty or loss of benefits to which you are entitled.

You are invited to participate in a research study conducted by Becay, Bugas, Bulawan, Campeño, Gallardo, Geraldine, Sembrano, at Brgy. Baybay, San Roque, Ozamiz City because you fit the inclusion criteria for informants of our study.

Your participation is completely voluntary. Please read the information below and ask questions about anything you do not understand before deciding whether to participate. You may discuss your participation with your parents, guardian, family, or friends before making your decision. If you decide to participate, you will be asked to sign this form. You will be given a copy of this form.

PURPOSE OF THE STUDY:

The purpose of this study is to collect and examine stool samples to help researchers identify the presence of microorganisms, parasites, or other factors related to health and disease. The study aims to improve understanding of gastrointestinal health and contribute to future medical research and public health programs.

STUDY PROCEDURES:

If you agree to participate, you will be asked to provide a stool sample using a sterile container provided by the researchers. Instructions for proper collection will be explained before the procedure. The sample may be collected at home or at an approved collection area and returned to the researchers afterward.

You may also be asked to answer a short health-related questionnaire. You may skip any question you do not wish to answer and may stop participating at any time without penalty.

All information and samples collected will be kept confidential and used only for research purposes.

DURATION

Participation in this study will take approximately 10-20 minutes, including instructions, questionnaire completion (if applicable), and stool sample collection.

APPENDIX C Cont'd

**Misamis University**
Ozamiz City
COLLEGE OF MEDICAL TECHNOLOGY
CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

III. POTENTIAL RISKS AND DISCOMFORTS

- You may feel slight discomfort or embarrassment during stool collection.
- There are no expected physical risks since the procedure is non-invasive.
- You may choose not to answer any question or withdraw at any time if you feel uncomfortable.

IV. POTENTIAL BENEFITS

- There may be no direct benefit to you.
- However, your participation may help in discovering potential plant-based treatments for parasitic infections and contribute to scientific knowledge.

V. CONFIDENTIALITY

- All information and samples collected will be kept strictly confidential.
- Your identity will not be disclosed in any report or publication.
- Data will be coded and used only for research purposes.

VI. VOLUNTARY PARTICIPATION AND WITHDRAWAL

- Your participation is entirely voluntary.
- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:

Researchers: Becoy, Bugas, Bulawan, Campeñito, Gallardo, Geraldizo, Sembrano

Institution: Misamis University

Contact Number: 09271590945

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: Jhil Rene W. Aguirre

Signature: [Signature] **Date:** April 24, 2020

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____ **Date:** _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: KC M. Bulawan

Signature: [Signature] **Date:** April 24, 2020

APPENDIX C Cont'd



Misamis University

Ozamiz City



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STOOL SAMPLE COLLECTION INSTRUCTIONS

1. Use the sterile container provided.
2. Avoid mixing stool with urine or water.
3. Collect a small portion of stool (about the size of a thumb).
4. Securely close the container.
5. Label the sample properly.
6. Submit the sample immediately as instructed.

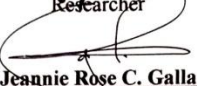
Thank you for your participation.

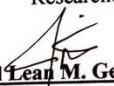

Daisy Joy D. Becov
Researcher


Roanne Jane P. Bugas
Researcher


Ke M. Bulawan
Researcher


Krizza Mae A. Campeciño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janyl Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SENEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd

 **Misamis University** 
Ozamiz City
COLLEGE OF MEDICAL TECHNOLOGY
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ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

ETHICS INFORMED ASSENT FORM
(Informed Assent Form for minors or children below 18 years old)

Informed Consent Form for: Allen Sandra L. Gomez
Name of the Researcher(s): Bray, Ruyos, Balaun, Compacion, Gallardo, Geraldine, Lembrano
Institution: Misamis University

INTRODUCTION:
We are 3rd Year Medical Technology students from Misamis University currently conducting a research study entitled "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines.**"

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You are invited to participate in a research study conducted by Bray, Ruyos, Balaun, Compacion, Gallardo, Geraldine, Lembrano, at Bray, Ruyos, San Roque, Ozamiz City because you fit the inclusion criteria for informants of our study.

Your participation is completely voluntary. Please read the information below and ask questions about anything you do not understand before deciding whether to participate. You may discuss your participation with your parents, guardian, family, or friends before making your decision. If you decide to participate, you will be asked to sign this form. You will be given a copy of this form.

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DURATION
Participation in this study will take approximately 10–20 minutes, including instructions, questionnaire completion (if applicable), and stool sample collection.

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

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III. POTENTIAL RISKS AND DISCOMFORTS

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- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:

Researchers: Bucay, Eugas, Bulawan, Compeñin, Gallardo, Geraldino, Gumbong

Institution: Misamis University

Contact Number: 0927 159 0465

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: Alien Sandra L. Gomez

Signature: [Signature]

Date: April 24, 2020

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____

Date: _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: pc. M. Bulawan

Signature: [Signature]

Date: April 24, 2020

APPENDIX C Cont'd



Misamis University

Ozamiz City



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STOOL SAMPLE COLLECTION INSTRUCTIONS

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4. Securely close the container.
5. Label the sample properly.
6. Submit the sample immediately as instructed.

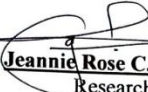
Thank you for your participation.


Daisy Joy D. Becov
Researcher

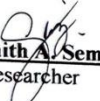

Roanne Jane P. Bugas
Researcher


Ke M. Bulawan
Researcher


Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janyl Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

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ETHICS INFORMED ASSENT FORM

(Informed Assent Form for minors or children below 18 years old)

Informed Consent Form for: Melanie Jane C. Salas
Name of the Researcher(s): Becay, Bugas, Bulawan, Campeño, Gallardo, Geraldito, Sembrano
Institution: Misamis University

INTRODUCTION:

We are 3rd Year Medical Technology students from Misamis University currently conducting a research study entitled "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines.**"

We are inviting you to participate in this study involving stool sample collection for research purposes. Your participation is completely voluntary. Before deciding whether to participate or not, you may take enough time to think carefully and discuss it with your parents, guardian, family, or friends.

If there are words, procedures, or concepts that you do not understand, the researchers will gladly explain them clearly. You are free to ask questions at any time before, during, or after the study. Choosing not to participate will not result in any penalty or loss of benefits to which you are entitled.

You are invited to participate in a research study conducted by Becay, Bugas, Bulawan, Campeño, Gallardo, Geraldito, Sembrano, at Brgy. Dibay, San Roque, Ozamiz City because you fit the inclusion criteria for informants of our study.

Your participation is completely voluntary. Please read the information below and ask questions about anything you do not understand before deciding whether to participate. You may discuss your participation with your parents, guardian, family, or friends before making your decision. If you decide to participate, you will be asked to sign this form. You will be given a copy of this form.

PURPOSE OF THE STUDY:

The purpose of this study is to collect and examine stool samples to help researchers identify the presence of microorganisms, parasites, or other factors related to health and disease. The study aims to improve understanding of gastrointestinal health and contribute to future medical research and public health programs.

STUDY PROCEDURES:

If you agree to participate, you will be asked to provide a stool sample using a sterile container provided by the researchers. Instructions for proper collection will be explained before the procedure. The sample may be collected at home or at an approved collection area and returned to the researchers afterward.

You may also be asked to answer a short health-related questionnaire. You may skip any question you do not wish to answer and may stop participating at any time without penalty.

All information and samples collected will be kept confidential and used only for research purposes.

DURATION

Participation in this study will take approximately 10-20 minutes, including instructions, questionnaire completion (if applicable), and stool sample collection.

APPENDIX C Cont'd



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III. POTENTIAL RISKS AND DISCOMFORTS

- You may feel slight discomfort or embarrassment during stool collection.
- There are no expected physical risks since the procedure is non-invasive.
- You may choose not to answer any question or withdraw at any time if you feel uncomfortable.

IV. POTENTIAL BENEFITS

- There may be no direct benefit to you.
- However, your participation may help in discovering potential plant-based treatments for parasitic infections and contribute to scientific knowledge.

V. CONFIDENTIALITY

- All information and samples collected will be kept strictly confidential.
- Your identity will not be disclosed in any report or publication.
- Data will be coded and used only for research purposes.

VI. VOLUNTARY PARTICIPATION AND WITHDRAWAL

- Your participation is entirely voluntary.
- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:

Researchers: Becay, Bugas, Bulawan, Campeño, Gallardo, Geraldito, Lembrano

Institution: Misamis University

Contact Number: 09271590465

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: Melanie Jane C. Sulas

Signature: Melanie Jane

Date: April 24, 2026

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____

Date: _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: KC M. Bulawan

Signature: KC M. Bulawan

Date: April 24, 2026

APPENDIX C Cont'd



Misamis University

Ozamiz City



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STOOL SAMPLE COLLECTION INSTRUCTIONS

1. Use the sterile container provided.
2. Avoid mixing stool with urine or water.
3. Collect a small portion of stool (about the size of a thumb).
4. Securely close the container.
5. Label the sample properly.
6. Submit the sample immediately as instructed.

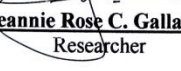
Thank you for your participation.


Daisy Joy D. Becoy
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher

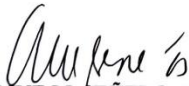

Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janvi Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEDO O. LAO, RMT, MSc. MLS
Research Adviser
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IV. POTENTIAL BENEFITS

- There may be no direct benefit to you.
- However, your participation may help in discovering potential plant-based treatments for parasitic infections and contribute to scientific knowledge.

V. CONFIDENTIALITY

- All information and samples collected will be kept strictly confidential.
- Your identity will not be disclosed in any report or publication.
- Data will be coded and used only for research purposes.

VI. VOLUNTARY PARTICIPATION AND WITHDRAWAL

- Your participation is entirely voluntary.
- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:

Researchers: Rey, Jr., Eulanda, Compaine, Gaudin, and others

Institution: Misamis University

Contact Number: 09241590465

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: John Lloyd G. Huway

Signature: [Signature]

Date: 4/24/2024

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____

Date: _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: KL M. Swanton

Signature: [Signature]

Date: April 24, 2024

APPENDIX C Cont'd



Misamis University

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STOOL SAMPLE COLLECTION INSTRUCTIONS

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5. Label the sample properly.
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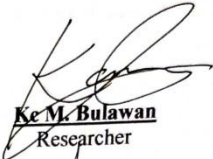
Thank you for your participation.



Daisy Joy D. Becoy
Researcher



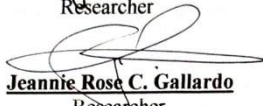
Roanne Jane P. Bugas
Researcher



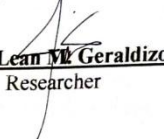
Ke M. Bulawan
Researcher



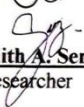
Krizza May A. Campeciño
Researcher



Jeannie Rose C. Gallardo
Researcher



Janyl Lean M. Geraldizo
Researcher



Nicole Faith A. Sembrano
Researcher



KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University



EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

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ETHICS INFORMED ASSENT FORM
(Informed Assent Form for minors or children below 18 years old)

Informed Consent Form for: Jessie G. Huway Jr
Name of the Researcher(s): Percy, Bugas, Bulawan, Campeño, Gallardo, Geraldito, Sembrano
Institution: Misamis University

INTRODUCTION:

We are 3rd Year Medical Technology students from Misamis University currently conducting a research study entitled “Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines.”

We are inviting you to participate in this study involving stool sample collection for research purposes. Your participation is completely voluntary. Before deciding whether to participate or not, you may take enough time to think carefully and discuss it with your parents, guardian, family, or friends.

If there are words, procedures, or concepts that you do not understand, the researchers will gladly explain them clearly. You are free to ask questions at any time before, during, or after the study. Choosing not to participate will not result in any penalty or loss of benefits to which you are entitled.

You are invited to participate in a research study conducted by Becky, Bugas, Bulawan, Campeño, Brgy. Babay, San Roque, Zamboanga because you fit the inclusion criteria for informants of our study.

Your participation is completely voluntary. Please read the information below and ask questions about anything you do not understand before deciding whether to participate. You may discuss your participation with your parents, guardian, family, or friends before making your decision. If you decide to participate, you will be asked to sign this form. You will be given a copy of this form.

PURPOSE OF THE STUDY:

THE PURPOSE OF THE STUDY: The purpose of this study is to collect and examine stool samples to help researchers identify the presence of microorganisms, parasites, or other factors related to health and disease. The study aims to improve understanding of gastrointestinal health and contribute to future medical research and public health programs.

STUDY PROCEDURES:

If you agree to participate, you will be asked to provide a stool sample using a sterile container provided by the researchers. Instructions for proper collection will be explained before the procedure. The sample may be collected at home or at an approved collection area and returned to the researchers afterward.

You may also be asked to answer a short health-related questionnaire. You may skip any question you do not wish to answer and may stop participating at any time without penalty.

All information and samples collected will be kept confidential and used only for research purposes.

DURATION

Participation in this study will take approximately 10–20 minutes, including instructions, questionnaire completion (if applicable), and stool sample collection.

APPENDIX C Cont'd



Misamis University

Ozamiz City



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III. POTENTIAL RISKS AND DISCOMFORTS

- You may feel slight discomfort or embarrassment during stool collection.
- There are no expected physical risks since the procedure is non-invasive.
- You may choose not to answer any question or withdraw at any time if you feel uncomfortable.

IV. POTENTIAL BENEFITS

- There may be no direct benefit to you.
- However, your participation may help in discovering potential plant-based treatments for parasitic infections and contribute to scientific knowledge.

V. CONFIDENTIALITY

- All information and samples collected will be kept strictly confidential.
- Your identity will not be disclosed in any report or publication.
- Data will be coded and used only for research purposes.

VI. VOLUNTARY PARTICIPATION AND WITHDRAWAL

- Your participation is entirely voluntary.
- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:
Researchers: Buaya, Buaya, Bulawan, Campacino, Galardo, Geraldito, Sembrando
Institution: Misamis University
Contact Number: 092715910405

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: Jessie G. Humayo JR.

Signature: [Signature]

Date: April 24, 2024

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____

Date: _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: KC M. Bulawan

Signature: [Signature]

Date: April 24, 2024

APPENDIX C Cont'd



Misamis University

Ozamiz City



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STOOL SAMPLE COLLECTION INSTRUCTIONS

1. Use the sterile container provided.
2. Avoid mixing stool with urine or water.
3. Collect a small portion of stool (about the size of a thumb).
4. Securely close the container.
5. Label the sample properly.
6. Submit the sample immediately as instructed.

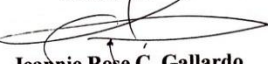
Thank you for your participation.

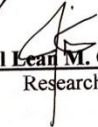

Daisy Joy D. Becov
Researcher

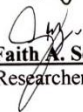

Roanne Marie P. Bugas
Researcher


Kc M. Bulawan
Researcher


Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janvi Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

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ETHICS INFORMED ASSENT FORM

(Informed Assent Form for minors or children below 18 years old)

Informed Consent Form for: JERAD a OLA
Name of the Researcher(s): Dr. Boy Boy, Bulawan, Caparino, Gerardo, Santos, Santero
Institution: Misamis University

INTRODUCTION:

We are 3rd Year Medical Technology students from Misamis University currently conducting a research study entitled "Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines."

We are inviting you to participate in this study involving stool sample collection for research purposes. Your participation is completely voluntary. Before deciding whether to participate or not, you may take enough time to think carefully and discuss it with your parents, guardian, family, or friends.

If there are words, procedures, or concepts that you do not understand, the researchers will gladly explain them clearly. You are free to ask questions at any time before, during, or after the study. Choosing not to participate will not result in any penalty or loss of benefits to which you are entitled.

You are invited to participate in a research study conducted by Dr. Boy Boy, Bulawan, Caparino, Gerardo, Santos, Santero at Dr. Boy Boy, Santero, Ozamiz City because you fit the inclusion criteria for informants of our study.

Your participation is completely voluntary. Please read the information below and ask questions about anything you do not understand before deciding whether to participate. You may discuss your participation with your parents, guardian, family, or friends before making your decision. If you decide to participate, you will be asked to sign this form. You will be given a copy of this form.

PURPOSE OF THE STUDY:

The purpose of this study is to collect and examine stool samples to help researchers identify the presence of microorganisms, parasites, or other factors related to health and disease. The study aims to improve understanding of gastrointestinal health and contribute to future medical research and public health programs.

STUDY PROCEDURES:

If you agree to participate, you will be asked to provide a stool sample using a sterile container provided by the researchers. Instructions for proper collection will be explained before the procedure. The sample may be collected at home or at an approved collection area and returned to the researchers afterward.

You may also be asked to answer a short health-related questionnaire. You may skip any question you do not wish to answer and may stop participating at any time without penalty.

All information and samples collected will be kept confidential and used only for research purposes.

DURATION

Participation in this study will take approximately 10–20 minutes, including instructions, questionnaire completion (if applicable), and stool sample collection.

APPENDIX C Cont'd



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III. POTENTIAL RISKS AND DISCOMFORTS

- You may feel slight discomfort or embarrassment during stool collection.
- There are no expected physical risks since the procedure is non-invasive.
- You may choose not to answer any question or withdraw at any time if you feel uncomfortable.

IV. POTENTIAL BENEFITS

- There may be no direct benefit to you.
- However, your participation may help in discovering potential plant-based treatments for parasitic infections and contribute to scientific knowledge.

V. CONFIDENTIALITY

- All information and samples collected will be kept strictly confidential.
- Your identity will not be disclosed in any report or publication.
- Data will be coded and used only for research purposes.

VI. VOLUNTARY PARTICIPATION AND WITHDRAWAL

- Your participation is entirely voluntary.
- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:

Researchers: Betty Bigas, Bulonvan, Carpio, Gancha, Gerardo, Sembrano

Institution: Misamis University

Contact Number: 09211518465

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: JERALD Q. OCA

Signature: [Signature]

Date: 4/24/2020

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____

Date: _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: LC M. Bulonvan

Signature: [Signature]

Date: April 24, 2020

APPENDIX C Cont'd



Misamis University

Ozamiz City



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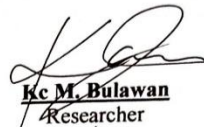
STOOL SAMPLE COLLECTION INSTRUCTIONS

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4. Securely close the container.
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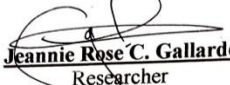
Thank you for your participation.

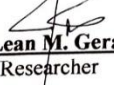

Daisy Joy D. Becoy
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher


Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janyl Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MANEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
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EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

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ETHICS INFORMED ASSENT FORM

(Informed Assent Form for minors or children below 18 years old)

Informed Consent Form for: Mhull Verideck C. Salda
Name of the Researcher(s): Becoy, Bugas, Bulawan, Campeñito, Gallardo, Geraldizo, Sembrano
Institution: Misamis University

INTRODUCTION:

We are 3rd Year Medical Technology students from Misamis University currently conducting a research study entitled "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines.**"

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You are invited to participate in a research study conducted by Becoy, Bugas, Bulawan, Campeñito, Gallardo, Geraldizo, Sembrano, at Pragy, Bafay, San Roque, Ozamiz City because you fit the inclusion criteria for informants of our study.

Your participation is completely voluntary. Please read the information below and ask questions about anything you do not understand before deciding whether to participate. You may discuss your participation with your parents, guardian, family, or friends before making your decision. If you decide to participate, you will be asked to sign this form. You will be given a copy of this form.

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You may also be asked to answer a short health-related questionnaire. You may skip any question you do not wish to answer and may stop participating at any time without penalty.

All information and samples collected will be kept confidential and used only for research purposes.

DURATION

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- Data will be coded and used only for research purposes.

VI. VOLUNTARY PARTICIPATION AND WITHDRAWAL

- Your participation is entirely voluntary.
- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:

Researchers: Benny Bugas Bulawan, Campesino, Gallardo, Geraldine, Sembrano

Institution: Misamis University

Contact Number: 09271590465

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: Mhull Vendrick C. Sabas

Signature: M.V.S.

Date: April 24, 2020

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____

Date: _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: KC M. Bulawan

Signature: [Signature]

Date: April 24, 2020

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

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STOOL SAMPLE COLLECTION INSTRUCTIONS

1. Use the sterile container provided.
2. Avoid mixing stool with urine or water.
3. Collect a small portion of stool (about the size of a thumb).
4. Securely close the container.
5. Label the sample properly.
6. Submit the sample immediately as instructed.

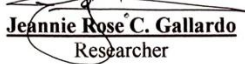
Thank you for your participation.


Daisy Joy D. Becoy
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher


Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janvi Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd



Misamis University

Ozamiz City



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ETHICS INFORMED ASSENT FORM

(Informed Assent Form for minors or children below 18 years old)

Informed Consent Form for: Cyril Jay T. Gerali
Name of the Researcher(s): Becky Bugas, Bulawan, Campeñón, Gallardo, Geraldiza, Sembrano
Institution: Misamis University

INTRODUCTION:

We are 3rd Year Medical Technology students from Misamis University currently conducting a research study entitled "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines.**"

We are inviting you to participate in this study involving stool sample collection for research purposes. Your participation is completely voluntary. Before deciding whether to participate or not, you may take enough time to think carefully and discuss it with your parents, guardian, family, or friends.

If there are words, procedures, or concepts that you do not understand, the researchers will gladly explain them clearly. You are free to ask questions at any time before, during, or after the study. Choosing not to participate will not result in any penalty or loss of benefits to which you are entitled.

You are invited to participate in a research study conducted by Becky Bugas, Bulawan, Campeñón, Gallardo, Geraldiza, Sembrano because you fit the inclusion criteria for informants of our study.

Your participation is completely voluntary. Please read the information below and ask questions about anything you do not understand before deciding whether to participate. You may discuss your participation with your parents, guardian, family, or friends before making your decision. If you decide to participate, you will be asked to sign this form. You will be given a copy of this form.

PURPOSE OF THE STUDY:

The purpose of this study is to collect and examine stool samples to help researchers identify the presence of microorganisms, parasites, or other factors related to health and disease. The study aims to improve understanding of gastrointestinal health and contribute to future medical research and public health programs.

STUDY PROCEDURES:

If you agree to participate, you will be asked to provide a stool sample using a sterile container provided by the researchers. Instructions for proper collection will be explained before the procedure. The sample may be collected at home or at an approved collection area and returned to the researchers afterward.

You may also be asked to answer a short health-related questionnaire. You may skip any question you do not wish to answer and may stop participating at any time without penalty.

All information and samples collected will be kept confidential and used only for research purposes.

DURATION

Participation in this study will take approximately 10-20 minutes, including instructions, questionnaire completion (if applicable), and stool sample collection.

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III. POTENTIAL RISKS AND DISCOMFORTS

- You may feel slight discomfort or embarrassment during stool collection.
- There are no expected physical risks since the procedure is non-invasive.
- You may choose not to answer any question or withdraw at any time if you feel uncomfortable.

IV. POTENTIAL BENEFITS

- There may be no direct benefit to you.
- However, your participation may help in discovering potential plant-based treatments for parasitic infections and contribute to scientific knowledge.

V. CONFIDENTIALITY

- All information and samples collected will be kept strictly confidential.
- Your identity will not be disclosed in any report or publication.
- Data will be coded and used only for research purposes.

VI. VOLUNTARY PARTICIPATION AND WITHDRAWAL

- Your participation is entirely voluntary.
- You may refuse to participate or withdraw at any time without penalty or loss of benefits.

VII. CONTACT INFORMATION

If you have any questions or concerns regarding the study, you may contact:

Researchers: Becerra, P. Vargas, Bulawan, Campesino, Gallardo, Gerardo, Sembrano

Institution: Misamis University

Contact Number: 0927159 0465

VIII. RIGHTS OF THE PARTICIPANT

- You have the right to ask questions at any time.
- You have the right to refuse or discontinue participation.
- You have the right to be informed about the study procedures.

IX. CONSENT

I have read and understood the information provided above. I voluntarily agree to participate in this study.

Participant's Name: Cyril Jay T. Gerali

Signature: [Signature]

Date: April 24, 2022

FOR ILLITERATE PARTICIPANTS (if applicable)

I confirm that the information in this consent form has been accurately explained to the participant, and they have freely agreed to participate.

Witness Name: _____

Signature: _____

Date: _____

RESEARCHER'S CERTIFICATION

I certify that I have explained the nature and purpose of the study to the participant and answered all questions.

Name of the Researcher: IC M. Bulawan

Signature: [Signature]

Date: April 24, 2022

APPENDIX C Cont'd



Misamis University

Ozamiz City



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STOOL SAMPLE COLLECTION INSTRUCTIONS

1. Use the sterile container provided.
2. Avoid mixing stool with urine or water.
3. Collect a small portion of stool (about the size of a thumb).
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5. Label the sample properly.
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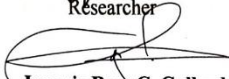
Thank you for your participation.


Daisy Joy D. Becoy
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher


Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janyl Leah M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SENEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd



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Ozamiz City



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PARENTAL CONSENT FORM

I / We ERICEON L. Gomez hereby willingly and voluntarily give my/our consent for my/our child John peler L. Gomez to participate in the research study entitled: "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines**", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

This participation involves the **collection of a stool sample** for laboratory analysis. Proper health and safety protocols will be strictly observed **during** the collection and handling of specimens.
I / We have considered the benefits that my/our son/daughter may derive **from his/her** participation in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

Furthermore, I / We understand that the researchers, the university, and its personnel shall not be held liable for any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Prig. Baybay, San Roque, Ozamiz City.

Signature of Father

ERICEON L. Gomez

Name of Father

Signature of Mother

Name of Mother

Signature of Guardian

Name of Guardian

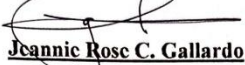
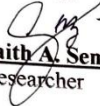
APPENDIX C Cont'd

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Ozamiz City

COLLEGE OF MEDICAL TECHNOLOGY

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Researchers:

 <u>Daisy Joy D. Becoy</u> Researcher	 <u>Roanne Jane P. Bugas</u> Researcher	 <u>Ke M. Bulawan</u> Researcher
 <u>Krizza Mae A. Sampeño</u> Researcher	 <u>Jeannie Rose C. Gallardo</u> Researcher	 <u>Janyl Lean M. Geraldizo</u> Researcher
 <u>Nicole Faith A. Sembrano</u> Researcher		


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PARENTAL CONSENT FORM

I / We Alvin C. Gomez hereby willingly and voluntarily give my/our consent for my/our child Ericson Aldrich L. Gomez to participate in the research study entitled: "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanol Extracts in Ozamiz City, Philippines**", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

This participation involves the **collection of a stool sample** for laboratory analysis. Proper health and safety protocols will be strictly observed during the collection and handling of specimens. I / We have considered the benefits that my/our son/daughter may derive **from his/her participation** in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

Furthermore, I / We understand that the researchers, the university, and its personnel shall not be **held liable** for any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Brgy. Baybay, San Roque, Ozamiz City.


Signature of Father

Ericson L. Gomez
Name of Father

Signature of Mother

Name of Mother

Signature of Guardian

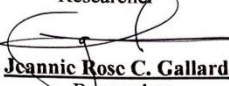
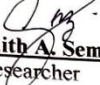
Name of Guardian

APPENDIX C Cont'd

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COLLEGE OF MEDICAL TECHNOLOGY

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Researchers:

 <u>Daisy Joy D. Becoy</u> Researcher	 <u>Roanne Jane P. Bugas</u> Researcher	 <u>Kc M. Bulawan</u> Researcher
 <u>Krizza Mac A. Campeño</u> Researcher	 <u>Jeannie Rose C. Gallardo</u> Researcher	 <u>Janyl Lean M. Geraldizo</u> Researcher
 <u>Nicole Faith A. Sembrano</u> Researcher		


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Research Adviser
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Dean, College of Medical Technology

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Ozamiz City



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PARENTAL CONSENT FORM

I / We Alfon C. Gomez hereby willingly and voluntarily give my/our consent for my/our child Berson Aldrich L. Gomez to participate in the research study entitled: "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanol Extracts in Ozamiz City, Philippines**", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

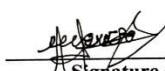
This participation involves the **collection of a stool sample** for laboratory analysis. Proper health and safety protocols will be strictly observed during the collection and handling of specimens. I / We have considered the benefits that my/our son/daughter may derive **from his/her participation** in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

Furthermore, I / We understand that the researchers, the university, and its personnel shall not be **held liable for** any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Brgy. Baybay, San Roque, Ozamiz City.


Signature of Father

Ericson L. Gomez
Name of Father

Signature of Mother

Name of Mother

Signature of Guardian

Name of Guardian

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
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Researchers:


Daisy Joy D. Becov
Researcher


Roanne Jane T. Bugas
Researcher


Ke M. Bulawan
Researcher


Krizza Mac A. Campeciño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janyl Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEL B. LAO, RMT, MSc. MLs
Research Adviser
College of Medical Technology
Misamis University


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Dean, College of Medical Technology

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

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PARENTAL CONSENT FORM

I / We Adilaida P. Dadotan hereby willingly and voluntarily give my/our consent for my/our child Edel Kean W. Ozamiz to participate in the research study entitled: "Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanol Extracts in Ozamiz City, Philippines", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

This participation involves the **collection of a stool sample** for laboratory analysis. Proper health and safety protocols will be strictly observed during the collection and handling of specimens.

I / We have considered the benefits that my/our son/daughter may derive from his/her participation in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

Furthermore, I / We understand that the researchers, the university, and its personnel shall not be held liable for any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Brg. Bagbagay, San Roque Ozamiz City.

Signature of Father

Signature of Mother

Name of Father

Name of Mother

Dadotan
Signature of Guardian

Adilaida P. Dadotan
Name of Guardian

APPENDIX C Cont'd



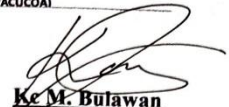
Misamis University

Ozamiz City

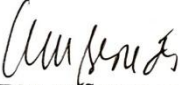
COLLEGE OF MEDICAL TECHNOLOGY

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ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

Researchers:

 <u>Daisy Joy D. Becov</u> Researcher	 <u>Roanne P. Bugas</u> Researcher	 <u>Ke M. Bulawan</u> Researcher
 <u>Krizza Mac A. Campeccino</u> Researcher	 <u>Jeannie Rose C. Gallardo</u> Researcher	 <u>Janyl Lean M. Geraldizo</u> Researcher
 <u>Nicole Faith A. Sembrano</u> Researcher		


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Misamis University


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Dean, College of Medical Technology

APPENDIX C Cont'd



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Ozamiz City



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ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

PARENTAL CONSENT FORM

I / We Melissa C. Salas hereby willingly and voluntarily give my/our consent for my/our child Melanie Jane C. Salas to participate in the research study entitled: "Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanol Extracts in Ozamiz City, Philippines", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

This participation involves the **collection of a stool sample** for laboratory analysis. Proper health and safety protocols will be strictly observed during the collection and handling of specimens.

I / We have considered the benefits that my/our son/daughter may derive from his/her participation in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

Furthermore, I / We understand that the researchers, the university, and its personnel shall not be held liable for any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Brg. Baybay, San Roque Ozamis City.

Signature of Father

Name of Father

✓ [Signature]
Signature of Mother

✓ Melissa Salas
Name of Mother

Signature of Guardian

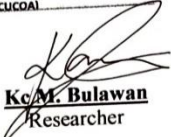
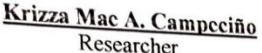
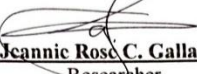
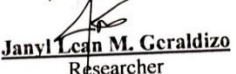
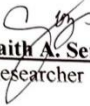
Name of Guardian

APPENDIX C Cont'd

 **Misamis University** 
Ozamiz City
COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

Researchers:

 <u>Daisy Joy D. Becov</u> Researcher	 <u>Roanne Jane P. Bugas</u> Researcher	 <u>Ke M. Bulawan</u> Researcher
 <u>Krizza Mac A. Campeciño</u> Researcher	 <u>Jeannie Rose C. Gallardo</u> Researcher	 <u>Janyl Lean M. Geraldizo</u> Researcher
 <u>Nicole Faith A. Sembrano</u> Researcher		


KARL MAXELO O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DAHV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

PARENTAL CONSENT FORM

I / We Jessie G. Huway hereby willingly and voluntarily give my/our consent for my/our child John Lloyd G. Huway to participate in the research study entitled: "Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

This participation involves the collection of a stool sample for laboratory analysis. Proper health and safety protocols will be strictly observed during the collection and handling of specimens.

I / We have considered the benefits that my/our son/daughter may derive from his/her participation in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

Furthermore, I / We understand that the researchers, the university, and its personnel shall not be held liable for any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Org. Baybay, Sarangani, Ozamiz City.


Signature of Father
Jessie G. Huway
Name of Father

Signature of Mother

Name of Mother

Signature of Guardian

Name of Guardian

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
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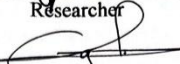
Researchers:


Daisy Joy D. Becoy
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher


Krizza Mae A. Campeccino
Researcher


Jeannie Rose C. Gallardo
Researcher


Janvi Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by ONV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

PARENTAL CONSENT FORM

I / We Jessie G. Huway hereby willingly and voluntarily give my/our consent for my/our child to participate in the research study entitled: "Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

This participation involves the collection of a stool sample for laboratory analysis. Proper health and safety protocols will be strictly observed during the collection and handling of specimens. I / We have considered the benefits that my/our son/daughter may derive from his/her participation in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

Furthermore, I / We understand that the researchers, the university, and its personnel shall not be held liable for any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Org. Dauphin, San Roque Ozamiz City.

Jessie G. Huway
Signature of Father

Jessie G. Huway
Name of Father

Signature of Mother

Name of Mother

Signature of Guardian

Name of Guardian

APPENDIX C Cont'd



Misamis University

Ozamiz City

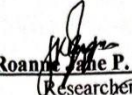


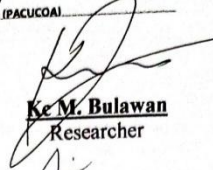
COLLEGE OF MEDICAL TECHNOLOGY

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ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

Researchers:


Daisy Joy D. Becov
Researcher


Roanne Jane P. Bugas
Researcher


Ke M. Bulawan
Researcher


Krizza Mac A. Campeciño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janyl Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAXENO O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENDIX C Cont'd



Misamis University

Ozamiz City



COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

PARENTAL CONSENT FORM

I / We JERALD Q. OCA JR. hereby willingly and voluntarily give my/our consent for my/our child JERALD Q. OCA to participate in the research study entitled: "Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanol Extracts in Ozamiz City, Philippines", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

This participation involves the **collection of a stool sample** for laboratory analysis. Proper health and safety protocols will be strictly observed during the collection and handling of specimens. I / We have considered the benefits that my/our son/daughter may derive from his/her participation in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

Furthermore, I / We understand that the researchers, the university, and its personnel shall not be held liable for any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Brgy. Baybay, San Roque, Ozamiz City.

Signature of Father

JERALD Q. OCA JR.

Signature of Mother

Name of Father

Pangina Q. Oca

Name of Mother

Signature of Guardian

Name of Guardian

APPENDIX C Cont'd



Misamis University

Ozamiz City



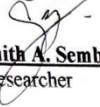
COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

Researchers:

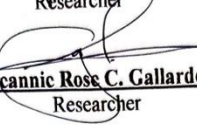

Daisy Joy D. Becoy
Researcher


Krizza Mae A. Campeciño
Researcher


Nicole Faith A. Sembrano
Researcher

APPENDIX C Cont'd

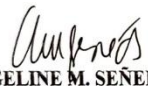

Roanne Jane P. Bugas
Researcher


Jeannie Rose C. Gallardo
Researcher


Kc M. Bulawan
Researcher


Janyl Lean M. Geraldizo
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
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Dean, College of Medical Technology

APPENDIX C Cont'd



Misamis University

Ozamiz City



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ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

PARENTAL CONSENT FORM

I / We Melissa C. Salas hereby willingly and voluntarily give my/our consent for my/our child Mhel Veniback C. Salas to participate in the research study entitled: "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanol Extracts in Ozamiz City, Philippines**", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

This participation involves the **collection of a stool sample** for laboratory analysis. Proper health and safety protocols will be strictly observed during the collection and handling of specimens.

I / We have considered the benefits that my/our son/daughter may derive from his/her participation in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

Furthermore, I / We understand that the researchers, the university, and its personnel shall not be held liable for any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Big Baybay, San Roque Ozamiz City.

Signature of Father

Name of Father

[Signature]
Signature of Mother

Melissa Salas
Name of Mother

Signature of Guardian

Name of Guardian



APPENDIX C Cont'd

Misamis University

Ozamiz City



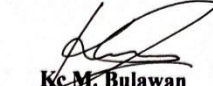
COLLEGE OF MEDICAL TECHNOLOGY

CERTIFIED: ISO 21001: 2018 Educational Organizations Management System by DNV
ACCREDITED: Philippines Association of Colleges and Universities Commission on Accreditation (PACUCOA)

Researchers:

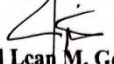

Daisy Joy D. Becoy
Researcher

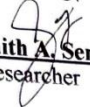

Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher


Krizza Mae A. Campeño
Researcher


Jeannie Rose C. Gallardo
Researcher


Janyl Lean M. Geraldizo
Researcher


Nicole Faith A. Sembrano
Researcher


KARL MAX E. LAO, RMT, MSc. MLS
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APPENDIX C Cont'd



Misamis University

Ozamiz City



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PARENTAL CONSENT FORM

I / We Manilyn D. Talaba hereby willingly and voluntarily give my/our consent for my/our child Cyril Jay T. Goral to participate in the research study entitled: "**Evaluation of the In Vitro Anthelmintic Activity and Cytotoxicity of *Cassia javanica* Bark Ethanolic Extracts in Ozamiz City, Philippines**", conducted by 3rd Year Bachelor of Science in Medical Technology students of Misamis University.

This participation involves the **collection of a stool sample** for laboratory analysis. Proper health and safety protocols will be strictly observed during the collection and handling of specimens.
I / We have considered the benefits that my/our son/daughter may derive from his/her participation in this study.

I / We understand that all information gathered will be treated with strict confidentiality, and the researchers will ensure that ethical standards are followed at all times.

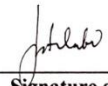
Furthermore, I / We understand that the researchers, the university, and its personnel shall not be held liable for any unforeseen circumstances beyond their control.

This consent is given freely and voluntarily.

This consent is signed this April day of 24, 2026 at Brgy. Baybay, San Roque
Ozamiz City.

Signature of Father

Name of Father



Signature of Mother

MANILYN D. TALABA

Name of Mother

Signature of Guardian

Name of Guardian

APPENDIX C Cont'd



Misamis University

Ozamiz City



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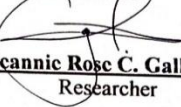
Researchers:


Daisy Joy D. Becoy
Researcher


Roanne Jane P. Bugas
Researcher


Kc M. Bulawan
Researcher

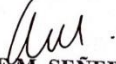

Krizza Mac A Campccino
Researcher


Jeannie Rose C. Gallardo
Researcher


Janyl Ecan M. Geraldizo
Researcher


Nicole Faith A Sembrano
Researcher


KARL MAXEL O. LAO, RMT, MSc. MLS
Research Adviser
College of Medical Technology
Misamis University


EVANGELINE M. SEÑEDO, RMT, MATMRS
Dean, College of Medical Technology

APPENNDIX D. Documentation



D.1. Sample Collection and Preparation

APPENDIX D Cont'd



D.2. *Cassia javanica* L. Tree

APPENDIX D Cont'd



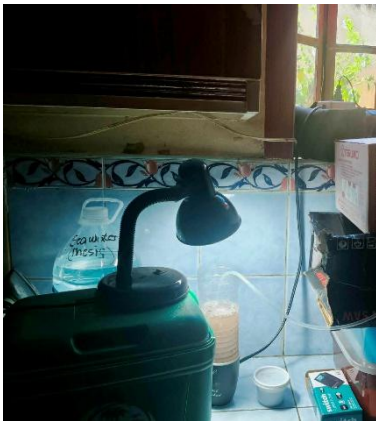
D.3. *Cassia javanica* L. Bark Collection

APPENNDIX D Cont'd



D.4. In Vitro Anthelmintic Assay

APPENDIX D Cont'd



D.5. Brine Shrimp Lethality Assay

CURRICULUM VITAE

PERSONAL INFORMATION

Name : Daisy Joy D. Becoy

Age : 21

Birthdate : December 08, 2004

Civil Status : Single

Nationality : Filipino

Home Address : San Pablo Zamboanga del Sur

Current Address : Bañadero, Ozamiz City

Contact Number : 09641336926

E-mail Address : daisyjoybecoy@gmail.com

EDUCATIONAL BACKGROUND

TERTIARY : Bachelor of Science in Medical Technology

Misamis University

Lam-an, Ozamiz City, Misamis Occidental

2023-present

SECONDARY : Zamboanga del Sur National High School - SHS Stand
Alone

Pagadian City, Zamboanga del Sur

2021-2023

Eugenia Andrin National High School

San Pablo, Zamboanga del Sur

2017-2021

PRIMARY : Pongapong Elementary School

San Pablo, Zamboanga del Sur

2011-2017

CURRICULUM VITAE

PERSONAL INFORMATION

Name : Roanne Jane P. Bugas

Age : 21

Birthdate : April 26, 2005

Civil Status : Single

Nationality : Filipino

Home Address : P-5 Tuburan, Aloran

Current Address : Ledesma St., Aguada, Ozamiz City

Contact Number : 09537492956

E-mail Address : roannejane0426@gmail.com

EDUCATIONAL BACKGROUND

TERTIARY : Bachelor of Science in Medical Technology

Misamis University

Lam-an, Ozamiz City, Misamis Occidental

2023-present

SECONDARY : Misamis University

Oroquieta, Misamis Occidental

2021-2023

St Matthew's High School JHS

Aloran, Misamis Occidental

2017-2021

PRIMARY : Tuburan Elementary School

Aloran, Misamis Occidental

2011-2017

CURRICULUM VITAE

PERSONAL INFORMATION

Name : Kc M. Bulawan

Age : 21

Birthdate : May 28, 2005

Civil Status : Single

Nationality : Filipino

Home Address : P-5 Talic, Oroquieta City

Current Address : Ledesma St., Aguada, Ozamiz City

Contact Number : 09157348160

E-mail Address : justkcbulawan@gmail.com

EDUCATIONAL BACKGROUND

TERTIARY : Bachelor of Science in Medical Technology

Misamis University

Lam-an, Ozamiz City, Misamis Occidental

2023-present

SECONDARY : Misamis Occidental National High School SHS

Oroquieta City, Misamis Occidental

2021-2023

Misamis Occidental National High School JHS

Oroquieta City, Misamis Occidental

2017-2021

PRIMARY : Oroquieta Seventh Day Adventist Elementary School

Oroquieta City, Misamis Occidental

2011-2017

CURRICULUM VITAE

PERSONAL INFORMATION

Name : Krizza Mae A. Campeciño

Age : 21

Birthdate : June 21, 2005

Civil Status : Single

Nationality : Filipino

Home Address : Bañadero, Ozamiz City, Misamis Occidental

Current Address : Bañadero, Ozamiz City, Misamis Occidental

Contact Number : 09387361380

E-mail Address : krizzamae.campecino@gmail.com

EDUCATIONAL BACKGROUND

TERTIARY : Bachelor of Science in Medical Technology

Misamis University

Lam-an, Ozamiz City, Misamis Occidental 2023-present

SECONDARY : La Salle University Integrated School

Ozamiz City

2021-2023

PRIMARY : La Salle University Integrated School

Ozamiz City

2011-2017

CURRICULUM VITAE

PERSONAL INFORMATION

Name : Jeannie Rose C. Gallardo

Age : 21

Birthdate : June 08, 2005

Civil Status : Single

Nationality : Filipino

Home Address : Limason Vincenzo Sagun, Zamboanga del Sur

Current Address : Aguada Laurel Street, Ozamiz City

Contact Number : 09456934741

E-mail Address : jeannierosegallardo@gmail.com

\ EDUCATIONAL BACKGROUND

TERTIARY : Bachelor of Science in Medical Technology

Misamis University

Lam-an, Ozamiz City, Misamis Occidental

2023-present

SECONDARY : Saint Columban College

Pagadian City, Zamboanga del Sur

2021-2023

Kabatan National High School

Vincenzo Sagun, Zamboanga del Sur

2017-2021

PRIMARY : Limason Elementary School

Vincenzo Sagun, Zamboanga del Sur

2011-2017

CURRICULUM VITAE

PERSONAL INFORMATION

Name : Janyl Lean M. Geraldizo

Age : 21

Birthdate : September 18, 2004

Civil Status : Single

Nationality : Filipino

Home Address : P-1 Tipolo, Plaridel, Misamis Occidental

Current Address : Ledesma St., Aguada, Ozamiz City

Contact Number : 09482050990

E-mail Address : yeenjanyl@gmail.com

EDUCATIONAL BACKGROUND

TERTIARY : Bachelor of Science in Medical Technology

Misamis University

Lam-an, Ozamiz City, Misamis Occidental

2023-present

SECONDARY : Misamis University

Oroquieta City, Misamis Occidental

2021-2023

Looc National High School

Plaridel, Misamis Occidental

2017-2021

PRIMARY : Calamba Central School

Calamba, Misamis Occidental

2011-2017

CURRICULUM VITAE

PERSONAL INFORMATION

Name : Nicole Faith A. Sembrano

Age : 21

Birthdate : April 11, 2005

Civil Status : Single

Nationality : Filipino

Home Address : Coloy, Coloran, Siay, Zamboanga Sibugay Province

Current Address : P-7 Carmen Annex, Ozamiz City

Contact Number : 09271590465

E-mail Address : colesembrano@gmail.com

EDUCATIONAL BACKGROUND

TERTIARY : Bachelor of Science in Medical Technology

Misamis University

Lam-an, Ozamiz City, Misamis Occidental

2023-present

SECONDARY : Imelda National High School SHS

Poblacion Imelda, Zamboanga Sibugay Province

2021-2023

Imelda National High School

Poblacion Imelda, Zamboanga Sibugay Province

2017-2021

PRIMARY : Coloran Elementary School

Coloran, Siay, Zamboanga Sibugay Province

2011-2017