Oracure: Efficacy of Honey and Split Gill Mushroom (Schizophyllum Commune) Extract in Reducing Staphylococcus Aureus Growth

Abogar, Princess Dianne P; Banaag, Iya S.; Cordero, Quennie S.; Dumigsi, Khrian Glen Yrel P.; Gique, Kaycee M; Mijares, Earl Jemarie J; Payan, Cynthia B

Cor Jesu College, Inc, Senior High School Digos City

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ABSTRACT

Oral health has long been recognized as an essential element of general well-being, but millions of individuals still suffer from oral health annually. These conditions can result from poor hygiene and cause dental-related problems. The rise of antibiotic-resistant bacteria, such as *S. aureus*, calls for alternative antimicrobial solutions. Honey and split gill mushroom has been traditionally used not only as a food, but also with therapeutic purposes, especially for the topical treatment of wounds. This study investigated the antibacterial potential of honey and split gill mushroom extracts against *S. aureus* growth using an experimental laboratory design. Extracts were extracted and analyzed using the Kirby-Bauer disk diffusion method against *S. aureus* strains, with statistical methods used to identify significant differences. Results showed that 100% honey extract exhibited a mean inhibition zone of 37.67 mm, classifying it as susceptible. In contrast, 100% split gill mushroom extract and the combination of honey and mushroom extract showed no inhibition, classifying them as resistant. The split gill mushroom showed no antibacterial activity in this study, and combining it with honey did not enhance effectiveness. These findings suggest that honey is a promising natural antimicrobial agent, while the mushroom extract was ineffective.

Keywords: oral health, *Staphylococcus aureus*, honey, split gill mushroom, experimental research design, quantitative research.

INTRODUCTION

Oral health has long been recognized as an essential element of general well-being, but millions of individuals still suffer from oral health annually. These conditions can result from poor hygiene and cause dental-related problems. Common treatments include scaling, root planning, fillings, and surgeries. However, these treatments can be very invasive, often painful, and do not always guarantee the prevention of relapse. Moreover, using synthetic chemicals in oral care products may negatively affect oral tissues and microorganisms.

From a global perspective, oral health is a major problem for the world's population. In India, nearly 65% of rural Indian adults suffer from caries and periodontitis, which stands to be one of the highest in South Asia (Janakiram et at., 2020). In the study of Strauss et al. (2019), Chilean adults had an approximately 40% higher prevalence of severe (29.3% vs 20.8%, $p < 0.05$) and a 13% higher prevalence of total periodontitis than those without caries. According to Bernabe et al. (2020), approximately half of the world's population suffers from untreated oral health conditions. In 2017, around 3.5 billion cases of oral diseases were reported globally, including 2.3 billion untreated cases, 796 million cases of severe periodontitis, and 139 million other dental issues. Global case numbers have risen by one billion in the last three decades, indicating a lack of access to oral health care, including preventative and restorative therapy (World Health Organization, 2022). Despite this, Northridge et al. (2020) stated that oral cavities and periodontal disease are the most frequently preventable chronic diseases. Herbal medicines, like neem, turmeric, garlic, and aloe vera are commonly employed in dental clinics, and 65% to 80% of the worldwide population use them to reduce inflammation, prevent oral pathogen growth, and provide anti-inflammatory, antiseptic, and antioxidant advantages (Álvarez-Vásquez et al., 2022; Cruz Martínez et al., 2017).

Oral health has always been a big issue in these countries yet inadequately cared for. Periodontal disease is the

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most common oral disease in the world, especially in developing countries such as Indonesia. Previous research on the prevalence of periodontal disease in Bandung City stated that the prevalence of 31% chronic periodontitis (CP) and aggressive periodontitis was 3.13% (Susanto et al., 2018). The prevalence of periodontitis in this study was 44.75%, which was higher than the study reported by Han et al. (2020), who stated that the prevalence of periodontitis in Asia was only around 32.3%. *S. aureus* is one of the contributors that worsens periodontitis. In a study carried out by Azmi et al. (2020) in Malaysia revealed that *S. aureus* in the oral cavity of healthy adults is high, with approximately 40% of them at the level of quantification and more than three-quarters (76.4%) at the level of detection, indicating oral cavity to be another potential reservoir of *S. aureus* in human. Research conducted in various areas on the oral cavity of healthy adults and children revealed a relatively high prevalence of *S. aureus*, ranging from 4% to 36% and 33% to 64%, respectively (Azmi et al., 2020).

In the Philippines, the National Survey on Oral Health (2018) revealed a concerning prevalence of periodontal disease, with 49.9% of assessed participants diagnosed with some form of the condition using the modified Community Periodontal Index (CPI). Moreover, the percentage of people with severe periodontitis was found to rise with age using the latter classification scheme. While 94.1% of middle-aged people and 100% of older-aged people had serious damage, 93.1% of young-olds had severe sickness (Garcia et al., 2023). This alarming statistic highlights the significant public health challenge posed by periodontal disease in the country. The prevalence is likely influenced by a complex interplay of factors, including socioeconomic status, access to dental care, dietary habits, and lifestyle choices. This is similar to the Philippine Dental Association's inquiry and emphasizes the need for additional research and public health initiatives to address *S. aureus* and periodontal disease (Campos et al., 2023).

This study was urgently needed due to the increasing prevalence of gum bacterial diseases, particularly *S. aureus*. The lack of specific research on alternative antimicrobial treatments like honey and split gill mushroom as natural extracts, create a significant gap in understanding their potential efficacy. Given the rising concerns over antibiotic resistance and the need for sustainable, natural remedies, this study aimed to fill this gap by investigating the antimicrobial properties of honey and split gill mushroom extract. By applying the theories of Loesche (1986) and Moerman (1979), which help understand how oral health can be controlled using specific microbial and medicinal plant variables. Loesche (1986) highlighted the Specific or Nonspecific Plaque Hypothesis, which posits that only certain microbes are implicated in dental caries, offering insight into the role of targeted preventive approaches in oral health. Loesche proposed that *Streptococcus mutans* is the primary causative agent of caries and can be controlled through antibiotics or vaccines. (Loesche, 1986; Taubman & Smith, 1993). This theory accords with the study on the effects of honey and split gill mushroom extract on managing oral bacteria and oral health. Hence, this study focused on selected bacterial species related to more natural methods of managing oral health with less environmental harm. This study sought to identify key factors that influence the effectiveness of these natural alternatives in preventing *S. aureus*, ultimately guiding the development of alternative treatments that could reduce dependence on conventional antibiotics and promote better health outcomes.

Statement of the Problem

The main objective of this study is to assess the effectiveness of honey and split gill mushroom extract in reducing oral bacteria. The study aimed to address the following questions:

1. What is the level of inhibiting properties (in terms of the *S. aureus* zones of inhibition) of the following honey and split gill mushroom extract solutions:

   1.1 T1 20 μg of 100% honey extract;
   1.2 T2 20 μg of 100% split gill mushroom extract; and
   1.3 T3 20 μg of 50 % honey extract + 50% split gill mushroom extract;

2. What is the zone inhibition of commercial mouthwash against *S. aureus*?

3. Is there a significant difference between the zones of inhibition of the difference of honey, split gill mushroom extract, and commercial mouthwash solutions as an oral hygiene agent?

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Hypothesis

To answer the problem listed in the preceding section objectively, the given null

the hypothesis was formulated:

H_o: There is no significant difference between the antimicrobial properties of the honey and split gill mushroom extract solutions and the control group in reducing oral bacterial growth.

Significance of the Study

The results from this study is be beneficial for several healthcare industries and stakeholders in various ways:

Department of Health Officials. This study could provide DOH with a cost-effective solution for improving oral hygiene. It could also give insights into promoting new natural oral care products. These products could be integrated into national oral health campaigns, focusing on reducing oral bacteria.

Pharmaceutical and Oral Care Product Manufacturers. Industries might desire to develop new natural, organic, or eco-friendly oral care products and would be interested in the results of this study.

Dental Professionals. This study could provide valuable insights for dentists seeking more effective, natural, and sustainable treatments for preventing oral diseases. It could contribute to developing new therapies or alternatives to chemical-based treatments.

Future Researchers. This research could serve as a starting point for future researchers, encouraging them to investigate deeper for future solutions that contribute to the development of effective, natural, and accessible treatments for oral health problems, particularly in regions like Southeast Asia, where traditional medicine plays a prominent role in healthcare practices.

Scope and Limitations

This study was conducted in a private catholic school in Digos City, Davao del sur, within the academic year 2024-2025. Researchers utilized honey and split gill mushroom extracts to reduce oral bacterial growth. This study utilized the agar diffusion to help us determine the antimicrobial resistance of the honey and split gill mushroom.

The study's main objective is to determine the antimicrobial properties of honey and split gill mushroom extracts. The mushroom that was utilized in this study is *S. commune* thus, other mushroom species were not assessed.

Definition of Terms

The following terms were defined conceptually and operationally according to how they were used in this study.

Antibacterial property. This refers to the ability of a substance to control bacterial populations by killing them (bactericidal) or stopping their growth (bacteriostatic), which is crucial for maintaining health and preventing disease spread (Chassagne et al., 2021). This study used the potential effect of honey and split gill mushrooms to prevent the growth of *S. aureus* as measured by the diameter of the zone of inhibition in a standard disk diffusion assay.

Honey. This refers to a natural substance produced by bees from nectar, characterized by its viscous consistency and composition of sugars, enzymes, and other bioactive compounds. It is the nutritional value of honey that has been recognized for its therapeutic properties—making it a natural remedy for various health conditions (Samarghandian et al., 2017). In this study, honey was specifically used in its unprocessed form to assess its antibacterial properties against *S. aureus* through the use of disk diffusion method.

Staphylococcus aureus. This refers to the gram-positive bacterium known for causing a range of infections,

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

from mild to severe skin conditions, life-threatening diseases. It is commonly found in human skin and mucous membranes, which is a major concern of global morbidity and mortality (Cheung et al., 2021). In this study, *S. aureus* was identified and cultured from laboratory samples to assess its vulnerability to antibacterial treatments using disk diffusion method to measure the zone of inhibition.

Split gill mushroom. This refers to a type of wood-decay fungus known for its distinctive split gills and contains bioactive compounds such as schizophyllan (a β-glucan), which has potential therapeutic applications (Saetang et al., 2023). In this study, split gill mushrooms are harvested, chilled, and extracted using solvents to obtain a liquid form. The extract is then tested for its antibacterial effects against *S. aureus* using a disk diffusion method to assess its ability to inhibit the bacteria.

Oracure. This refers to a coined term derived from the prefix "Ora-", which signifies the focus on the oral cavity, and related healthcare fields, and the suffix "-cure", highlighting the commitment to healing, and treatment. The brand name encapsulates the research objective of developing effective, science-based solutions to promote oral health and alleviate oral pain or discomfort.

Zone of Inhibition (ZOI). This refers to the clear area surrounding an antimicrobial agent on an agar plate where bacterial growth has been prevented, indicating the effectiveness of the substance against the tested microorganism. It serves as a standard metric in microbiological studies to evaluate antibacterial potency. In this study, the ZOI is measured in millimeters using a ruler or caliper around paper disks infused with honey or split gill mushroom extract placed on an agar plate inoculated with *S. aureus*. The diameter of the clear zone indicates the antibacterial activity of each substance.

METHODS

This section outlines the research design, participant selection, data collection, and analysis techniques to ensure the study's validity and reliability, supporting the assessment and interpretation of results.

Research Design

This study used a quantitative, true experimental research design to assess and determine the efficacy of honey and split gill mushrooms in inhibiting oral bacteria. According to Bianconi et al. (2024), researchers manipulate one or more independent variables as treatments, assign subjects to different treatment levels, and then observe the effects of these treatments on the outcomes under investigation. In this study, the researchers used four groups; three experimental and one control, with three different concentrations for each treatment, allowing them to combine statistical and observational data to arrive at informed conclusions about the antibacterial properties of honey and split gill mushrooms.

Additionally, the research aimed to investigate whether honey and split gill mushrooms could serve as ingredients in an antimicrobial product targeting *S. aureus*, a bacterium present in the gums. Consequently, the study employed a posttest-only design, where participants underwent a specific treatment or intervention, and subsequent outcomes were recorded afterward (Birt et al., 2022). This approach enabled researchers to evaluate alterations in bacterial growth after exposure to the plant without the need for initial measurements. Therefore, the posttest-only design was selected for this research to assess bacterial growth in samples post-exposure to varying concentrations of the plant extract, demonstrating that it was the most suitable design for this investigation.

Subject of the Study

This study focused on bacteria, specifically *S. aureus*, a gram-positive, bacterial human pathogen that is responsible for a wide range of clinical diseases. This type of bacteria is able to enter the bloodstream or the internal tissues, which may cause a range of potentially serious infections (Taylor & Unakal, 2021). In several studies, *S. aureus* is one of those bacteria that lives in dental biofilms and causes mouth infections and dental caries (Hassan et al., 2021).

This study aimed to assess the efficacy of honey and split gill mushroom's beneficial properties in reducing *S.*

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

aureus. For this study, *S. aureus* was required, with three (3) experimental groups and one (1) control group. The experimental groups were divided into three (3) different treatments, each group consisted of three (3) *S. aureus*, with one (1) bacteria each extract of split gill mushroom, honey, and a combination of both.

Moreover, the *S. aureus* bacteria was obtained from a private hospital and upon inoculation with *S. aureus*, the mixture exhibited a more fluid consistency, indicating the formation of a bacterial suspension. This suggests a successful dispersion of bacterial cells throughout the medium, which is essential for consistent testing in the disk diffusion assay.

Sampling Techniques

This study utilized a complete random design (CRD) for subject selection in the experiment. The CRD involved selecting bacterial samples without any systematic bias, ensuring that the subset of bacteria for study or analysis was both neutral and representative. Researchers commonly use complete random design as a tool for observation and data collection (DiCiaccio, 2023). In this study, the variables were evenly distributed. The complete random design was essential for drawing statistical conclusions about the population, as it maintained strong internal validity by using randomization to minimize the potential impact of confounding variables. This approach ensured that each bacterial strain had an equal chance of being included in the sample, thereby reducing bias and enhancing representativeness.

A random sample can achieve heightened external validity by accurately reflecting the characteristics of the larger population, a representative subset of *S. aureus*. Furthermore, the sample size was evenly distributed. There were three repetitions per setup, contributing to the generalizability of the findings to the broader population of this bacterium.

Measures

The agar diffusion test serves as the main approach to assess the antimicrobial properties of natural products. This process involves inoculating bacterial cells on nutrient agar plates, followed by placing test samples on these plates. The plates are then incubated, and the bacterial growth is evaluated from the plates (Bubonja-Šonje et al., 2020). The researchers took note of the measurement of the size of a growth inhibition zone around the sample, which was to be placed onto a paper disc or into a well cut into the agar. According to Hossain et al. (2022), in finding the antibacterial properties of the material, researchers assess the various properties such as low water content, high viscosity, acidity, hydrogen peroxide content, and non-peroxide components for honey. For mushrooms, antibacterial properties are influenced by factors such as the total phenol and flavonoid content (Kosanić et al., 2016). The inhibition zone diameter was considered resistant when it was ≤ 14 mm, moderate when it was 15-17 mm, and sensitive when it was ≥ 18 mm. The primary objective of this assessment was to appraise the potential efficacy of the honey and split gill mushroom extract in reducing oral bacteria, specifically concerning its impact on *S. aureus* (Yang et al., 2019).

Table 1. Table of Interpretation on the Growth Inhibition of the Different Concentrations of Staphylococcus aureus

Mean Score Interval	**Descriptive Equivalent**	**Interpretation**
≥18 mm	Susceptible	The antibacterial activity showed an excellent image of the zone of inhibition
15.00 mm – 17.00 mm	Moderate	The antibacterial activity showed a fair image of the zone of zone of inhibition
≤14 mm	Resistant	The antibacterial activity showed

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

a poor image of the zone of inhibition

Data Gathering Procedure

The data collection procedures were crucial to the research as they ensured the reliability and validity of the results. This section of the report detailed the methods used to gather the data, offering a clear overview of how the necessary information was obtained.

A. Pre-experimental Protocols

1. The researchers distributed an approval letter to the school principal to seek academic consent and a separate letter to the medical technologist to request permission for conducting the actual experiment in a private hospital located in Digos City
2. Upon receiving both signed and approved letters, the researchers promptly gathered all the necessary materials required for the execution of the experiment.

B. Extraction of the Honey

The following procedures below are adapted from Mama et al. (2019)**.** Pure, undiluted honey was sourced from a trusted local supplier to ensure quality and authenticity.

1. The researchers inspected the honey for impurities and sediment, wax, or other contaminants visually. In case of a need, they performed a simple purity test.
2. The researchers opened the honey container carefully using sterilized tools so that it would not contaminate.
3. The honey was transferred from a clean spoon or scoop to a reduced clean container for use.
4. The researchers weighed out 10 g for each test sample using the digital kitchen scale, which ensured that all measurements carried out were uniform in each trial.
5. The researchers packed each 10 g in separate, clean, tight-sealable glass containers or any other container. It was labeled properly with the date of preparation, honey weight, and what it is to play in this experiment.
6. The researchers stored the ready packets of honey in a cool, dry place away from sun, heat, or moisture.
7. The researchers ensured that the honey storage room should have a relatively constant temperature to not ferment.
8. Before infusing honey during the experiment, the researchers inspected the containers and determined no change in viscosity, color, or odor, which can denote the presence of contaminants or spoiling.
9. The researchers took direct honey from ready packs prepared for the experiment, as when honey is not in direct use, it has the containers sealed up properly.

C. Extraction of the Split Gill Mushroom (Schizophyllum commune)

The following procedures below are adapted from Saetang et al. (2022)

1. The researchers freshly picked split gill mushrooms from the nearby forest, then gently cleaned them using a soft brush or damp cloth to remove dirt.
2. The mushrooms were sliced into small pieces to maximize the surface area for extraction, accounting

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

for fresh mushrooms' 90% water content.

3. A large pot was prepared for split gill mushrooms. Distilled water was added to the pot and brought to a boil.

4. Once the water has boiled, the heat is reduced to a simmer. Add the sliced split gill mushrooms to the simmering water.

5. The mixture was simmered for one to two hours, and stirred occasionally to ensure even extraction.

6. The pot was removed from the heat after simmering for one to two hours. A fine mesh strainer or cheesecloth was used to strain out the solid mushroom material from the liquid.

7. The strained liquid was poured into a wide, shallow pan or large saucepan. The larger the surface area, the faster the water evaporates.

8. The pan was placed on the stove over low heat (ideally no higher than 50-60°C or 122-140°F). Using a thermometer, the temperature was maintained to avoid degrading the bioactive compounds. Then, it was simmered gently without allowing the liquid to boil and stirred occasionally to prevent burning or sticking.

9. The solution was continuously simmered gently for several hours. The pan was kept uncovered to allow for water evaporation As the water evaporated, the volume decreased, and the extract thickened. The extract was periodically weighed to keep track of how much liquid remains. The liquid was reduced by about 75% to get down to the desired concentrated extract. The remaining extract was watery.

10. The extract's consistency was checked, and evaporation was stopped if it already reached the desired concentration.

11. The concentrated extract was cooled down to room temperature. Once cooled, it was transferred into airtight glass containers for storage.

12. The extract was stored in a cool, dark place to preserve its potency.

D. Bacterial Strain and Culture Media Preparation

The following procedures below were adopted from Missiakas and Schneewind (2013)**.**

1. *S. aureus* bacteria were sourced from a laboratory within a specific hospital.

2. The bacteria were transferred to a petri dish, which serves as a

for preserving bacteria, fungi, or microorganisms.

3. The culture medium was contained and kept in a regulated environment to support its bacterial growth and culture.

E. Formulation of Concentrations

The following formulation procedures were adapted based on methodologies described by Intech Open (2023) and Academia.edu (2023), aiming to evaluate the antimicrobial efficacy of pure honey, split gill mushroom (*S. commune*) extract, and their combination using the agar disk diffusion method:

1. 100% pure honey and split gill mushroom extract were mixed. culture medium The mixture was then stirred thoroughly to ensure an even distribution of the beneficial compound. A natural substance produced by bees from nectar characterizes natural substances produced by bees from nectar,

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

characterized by its viscous consistency and composition of sugars, enzymes, and other bioactive compounds.

2. For Treatment 1, 20 mL of 100% pure honey extract was utilized. A drop of 20 μg honey was put in the petri dish

3. For Treatment 2, 20 mL of 100% pure mushroom extract was utilized. A drop of 20 μg mushroom was put in the petri dish.

4. For Treatment 3, a 100% concentration combined mixture of 50% honey and 50% split gill mushroom was prepared by mixing 10 mL of honey, and 10 mL of split gill mushroom extract. A drop of 20 μg mushroom was put in the petri dish.

F. Agar Diffusion Method

The below protocols were adapted from Hudzicki (2009) in an effort to test the antimicrobial action of various extracts using the agar disk diffusion method:

1. Mueller-Hinton agar was prepared, filled into sterile Petri plates, and allowed to solidify to provide a medium for the growth of *S. aureus.*

2. An unstained suspension of *S. aureus* was inoculated evenly onto the surface of solid agar with a sterile swab to create an even lawn of bacteria.

3. Sterile paper disks were loaded with the test substances, including honey extract, split gill mushroom extract, a mixture of both extracts, and an extract of commercially purchased mouthwash. Each treatment was used in triplicate to provide reproducibility. The disks were then placed carefully on the inoculated agar surface.

4. The plates were incubated at 35–37°C for 24 hours to facilitate bacterial growth and diffusion of the antimicrobial agents from the disks into the surrounding agar.

5. The size of the inhibition zones surrounding each disk was recorded in millimeters after incubation to determine the antimicrobial activity against *S. aureus.*

6. The inhibition zones were measured and compared to determine the relative potency of the various extracts to inhibit the growth of *S. aureus.*

G. Determination of Antimicrobial Activity of Honey and Split Gill Mushroom Extracts

The following procedures below were adapted from Hudzicki (2009):

1. Based on the measured inhibition zones, the bacterial resistance level was

assessed for each extract (honey, split gill mushroom, combination of both extracts, and mouthwash).

2. The bacterial resistance was classified as susceptible, intermediate, or resistant by comparing the measured inhibition zones to a standard chart.

3. The researchers determined which extract shows the greatest effectiveness in inhibiting *S. aureus* growth based on the size of the inhibition zones.

4. The resistance levels for each antimicrobial extract were documented and their efficacy in reducing *S. aureus* growth was compared.

Analysis and Interpretation

In this study, the data was analyzed using mean, standard deviation, and ANOVA to determine the effectiveness

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

of honey and split gill mushroom extractions in reducing oral bacterial growth.

Mean. This is an effective tool to utilize when comparing two sets of data, and it serves as an indicator of the average size of inhibition zones, measured in millimeters, thus representing the bacterial growth inhibition of each extraction.

Kruskal-Wallis Test. The Kruskal-Wallis test is a non-parametric replacement for one-way ANOVA, used to indicate whether there is a statistically significant difference between medians from three or more independent groups. It is very useful where the normality assumption does not hold because it does not need a normal distribution and is more robust against outliers (Bobbitt, 2022).

Dunn's Test. Dunn's Test is a non-parametric statistical test used for comparing multiple groups to each other It determines whether the difference between the medians of various groups is statistically significant. It's particularly useful when analyzing data with unequal sample sizes or when the assumption of normality is violated (GeeksforGeeks, 2024).

Ethical Considerations

This study follows high ethical standards to ensure the protection of the participants and the environment. We are concerned with informed consent, confidentiality of data, and risk reduction, aiming to conduct responsible research that benefits society while protecting public health.

Data Integrity. Data integrity is enhanced by capturing samples in real-time, employing standardized methodologies, and educating staff on correct procedures. These measures minimize variability, bias, and human mistakes, guaranteeing dependable and uniform data. This groundwork is crucial for generating legitimate and credible research results..

Minimizing Risk and Harm. Ensuring ethical guidelines and regulatory frameworks enhances the credibility of the research and fosters public trust in scientific inquiry. By minimizing risk and harm, researchers demonstrate their commitment to responsible research practices, which is essential for advancing knowledge and promoting the welfare of society.

RESULTS AND DISCUSSION

This chapter deals with the presentation, analysis, and interpretation of data. The first part describes the results of the effectiveness of the different solutions of honey and split gill mushroom on *S. aureus.* The second part presents the antibacterial property of the positive control using commercial treatment for *S. aureus* using mouthwash. The third part presents the significant difference in the antibacterial properties of the different solutions of honey and split gill mushroom compared to the commercial product in the inhibition of *S. aureus.*

Antibacterial Property of the Different Solutions of Honey and Split Gill Mushroom on Staphylococcus aureus

The study assessed the effectiveness of a honey and split gill mushroom solution in inhibiting the growth of *S. aureus* using three treatments: 20µg of 100% honey extract (T1), 20µg of 100% split gill mushroom extract (T2), and 20µg of a 50% honey and 50% split gill mushroom extract (T3). The antibacterial activity of each treatment was evaluated by measuring the zone of inhibition across three replications (R1, R2, R3). Results showed that T1 exhibited a significant zone of inhibition, ranging from 41mm in R1 to 31mm in R3, indicating strong antibacterial activity. This confirms that honey has a considerable inhibitory effect on *S. aureus.* In contrast, T2 and T3 showed no measurable zone of inhibition (0mm across all replications), indicating resistance and no significant antibacterial activity. The consistency in mean and standard deviation further supports the ineffectiveness of these treatments against *S. aureus*. Ultimately, the study demonstrates that only the 100% honey extract (T1) effectively inhibits *S. aureus,* while the 100% split gill mushroom extract (T2) and the combined extract (T3) show no antibacterial effect.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Table 2. Antibacterial Property of the different Solution of Honey and Split Gill Mushroom on Staphylococcus aureus

Treatments	Zone of Inhibition (in mm)			Mean	SD	Description
	R1	R2	R3			
T1	41mm	41mm	31mm	37.67	5.77	Susceptible
T2	0mm	0mm	0mm	0	0	Resistant
T3	0mm	0mm	0mm	0	0	Resistant

This finding supports the study of Girma et al. (2019) and Nader et al. (2021), honey is effective against a wide range of bacteria, including those resistant to antibiotics, especially *S. aureus*. It was observed that gram-positive bacteria tend to be more susceptible to honey. In studies involving microbial test strains, *S. aureus*, a gram-positive bacterium, is frequently selected for testing due to its notable sensitivity to honey and its status as a readily available model organism for researchers (Bucekova et al., 2023). Though honey has shown considerable antimicrobial properties against *S. aureus*, studies reveal that the split gill mushroom exhibits no inhibitory effect on this bacterium, indicating that the mushroom lacks the antibacterial capabilities found in honey. This is in contrast to the findings of Sharma et al. (2024) which stated that the ethyl acetate extract of split gill mushroom has a good antimicrobial effect against *S. aureus*. This implies that the antibacterial activity of natural substances such as honey and split gill fungus varies greatly depending on the specific bioactive components present and the extraction procedures used.

Antibacterial Property of Commercial Treatment on *Staphylococcus aureus*

The study determined the effectiveness of commercial mouthwash on the growth inhibition of *S. aureus* with one treatment: Treatment 1 - 20µg of 100% commercial treatment. The researchers determined the antibacterial property by measuring the zone of inhibition per treatment in each replication (R1, R2, R3). Table 3 shows the difference test on 3 replications. For T4, it displayed no gap or difference in terms of mean and standard deviation. It shows a 0 mm zone of inhibition from R1 to 0 mm in R3, which is considered resistant. This means that the antibacterial activity of T1 from 3 replications showed no zone of inhibition. Hence, the researchers obtained the following results.

Table 3. Antibacterial Property of Commercial Treatment on Staphylococcus aureus

Treatments	Zone of Inhibition (in mm)			Mean	SD	Description
	R1	R2	R3			
Commercial Mouthwash	0	0	0	0	0	Resistant

This was supported by Andrade et al. (2009) which states that the mouthwash showed poor results in inhibiting bacterial growth, as it had no effect at any dilution against 26 community strains and 4 hospital strains. This suggests that, despite its common use, the used mouthwash may not be as effective in controlling a wide variety of oral bacteria, both in community and healthcare settings. In addition, study shows that thymol has shown significant antimicrobial efficacy against *S. aureus*, particularly in its role in oral health. Research indicates that thymol disrupts the cell homeostasis of *S. aureus* and inhibits its growth at low concentrations (Li et al., 2022). However, the mouthwash that was utilized in this study does not have thymol in a result, no desired effect was observed.

Significant Difference in the Antibacterial Property of the Different Solutions of Honey and Split Gill Mushroom Compared to the Commercial Product in the Inhibition of *Staphylococcus aureus*

Table 4 presents the results of the comparative analysis on the antibacterial property of the experimental group and control group, analyzed based on the zone of inhibition. To assess the statistical validity of the study, a

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

normality test using the Kolmogorov-Smirnov test was conducted to check if the data followed a normal distribution. The test revealed a significant departure from normality (W = 0.458, p = 0.000), indicating that the data on inhibitory property of the treatment did not meet the assumptions required for parametric analysis. Consequently, this suggests that alternative statistical methods may be needed to properly analyze the data. Moreover, the Independent-Samples Kruskal-Wallis Test was employed for the analysis. This non-parametric method effectively assesses the comparison between treatments without requiring normality (Ostertagova et al., 2014).

It can be noted that the test statistic value for the overall zone of inhibition is 10.800, with 3 degrees of freedom and a p-value of 0.013 which is lesser than 0.05. This means that the study needed to reject the null hypothesis. This indicates that there is a significant difference in the inhibitory property of *S. aureus* when observed using the zone of inhibition. Further, this means that different treatments have varying degrees of effectiveness in inhibiting *S. aureus*.

Table 4. Significant Difference in the Antibacterial Property of the Different Solutions of Honey and Split Gill Mushroom Compared to the Commercial Product in the Inhibition of Staphylococcus aureus

Variables Reviewed	Test Statistic	df	p-value	Decision	Interpretation
Zone of Inhibition	10.800	3	10.800	Reject H_o	Significant Difference

To determine which of the three concentrations significantly differed from the others, a post hoc analysis was conducted, specifically pairwise comparisons of sample means using Dunn's test. The Dunn's Test is used to assess pairwise differences between treatment groups for significance, specifically when conducting multiple comparisons. This non-parametric test compares all possible pairs of groups while controlling the probability of making one or more Type I errors (Dinno, 2015).

Table 5 presents the results of post hoc comparisons conducted using Dunn's test. The analysis revealed significant differences between treatments. Specifically, Treatment 1 was significantly different from Treatment 2, with a test statistic of 6.000, a standard error of 2.236, a standard test statistic of 2.683, and an adjusted significance value of 0.044. Similarly, Treatment 1 differed significantly from Treatment 3 (t = 6.000, SE = 2.236, p = 0.044), and Treatment 4 (t = 6.000, SE = 2.236, p = 0.044). These findings indicate that Treatment 1 is distinct from the other treatments. In contrast, no significant differences were observed between Treatments 2, 3, and 4, as all pairwise comparisons between these treatments yielded a significance value of 1.000, both before and after adjustment.

Table 5. Post Hoc Comparisons using the Dunn's Test

	Test Statistic	SE	p	Decision	Interpretation
Between T1 and T2	6.000	2.236	0.000	Reject H_o	Significant
Between T1 and T3	6.000	2.236	0.000	Reject H_o	Significant
Between T1 and Control	6.000	2.236	0.000	Reject H_o	Significant
Between T2 and T3	0.000	2.236	1.000	Fail to Reject H_o	Not Significant
Between T2 and Control	0.000	2.236	1.000	Fail to Reject H_o	Not Significant
Between T3 and Control	0.000	2.236	1.000	Fail to Reject H_o	Not Significant

Overall, based on the findings presented in Table 3, there is a statistically significant difference between T1 and each of the other groups (T2, T3, and Control), while there is no significant difference between T2 and T3, T2

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

and Control, and T3 and Control. The absence of a significant difference between T2, T3 and control, suggests that these might lack effectiveness in eliminating *S. aureus*.

The results are supported by the study of Mandal and Mandal (2011), stating that honey possesses hygroscopic properties, allowing it to extract moisture from its surroundings and dehydrate bacteria. Additionally, its elevated sugar concentration and low pH level can inhibit the growth of microbes. This can explain why the treatments with lower solute concentrations (T2 and T3) had exhibited no zones of inhibition. Moreover, according to Slover et al. (2009), plant extracts and honey are the primary sources for novel active compounds, which have been proven effective against various bacterial infections and inflammatory conditions (Molan, 2008). Commercially used mouthwashes have shown more potent antibacterial activity than plant and fungal extracts (Kumar et al., 2016). Enhanced activity is contributed mainly by antimicrobial agents like chlorhexidine, cetylpyridinium chloride, and essential oils (Van Strydonck et al., 2012). While bioactive compounds present in extracts from fungi and plants may exhibit activity, they are affected by factors like concentration and extraction method used (Abdallah et al., 2015). While some of the natural compounds like flavonoids and phenolics possess antimicrobial as well as antioxidant activities, their activity is variable in nature (Gulcin, 2012). More specifically, mouthwashes containing chlorhexidine are employed as a gold standard because their activity is well established and consistent in nature (Van Strydonck et al., 2012).

SUMMARY

The increasing problem of prevalence of oral bacterial diseases, particularly *S. aureus*-related periodontitis, and the limitations of conventional treatments, which can be invasive and rely on synthetic chemicals with potential adverse effects. To address this, this study explored the antimicrobial properties of honey and split gill mushroom as natural alternatives. This involved extracting pure honey and mushroom extracts, preparing bacterial cultures, and formulating treatment concentrations. These extracts are then tested against *S. aureus* to evaluate their effectiveness in reducing oral bacteria and providing a sustainable alternative to conventional antibiotics.

In this experiment, honey extract demonstrated the highest and only significant antibacterial activity against *S. aureus*, with a zone of inhibition measuring 41mm, 41mm, and 31mm, indicating its strong antimicrobial properties. In contrast, the split gill ushroom extract showed no antibacterial activity, with a zone of inhibition measuring 0mm, 0mm, and 0mm, suggesting that it was ineffective under the tested conditions. When combined with honey, the mushroom extract did not enhance or alter honey's inhibitory effect, as the combination also showed 0mm inhibition, indicating no synergistic effect. The control group provided a baseline, confirming that observed changes in bacterial growth were due to the treatments. Overall, honey was the only substance to reject the null hypothesis, confirming its potential as a potent natural antimicrobial agent, while the split gill mushroom extract showed no measurable efficacy in this experiment.

CONCLUSIONS

Oral health is a major problem for the world's population in various countries. Gum diseases, such as periodontitis, are prevalent oral health issues that affect individuals worldwide. There are a few safer approaches to controlling the growth of harmful oral bacteria compared to existing treatments like deep cleaning and antibiotic therapy. Additionally, there is a lack of emphasis on utilizing naturally occurring antibacterial properties to counteract gum infections effectively. Hence, this study aimed to discover the efficacy of honey and split gill mushrooms in reducing *S. aureus.* The findings of the study led researchers to arrive at the following conclusions:

1. Honey showed strong antibacterial activity against *S. aureus* with a significant zone of inhibition, indicating its effective antimicrobial properties and can suppress bacterial growth. In contrast, both the split gill mushroom extract and the honey-mushroom solution showed no zones of inhibition, suggesting that honey alone is effective in reducing bacterial growth, while the mushroom extract, possibly due to its lower concentration or weaker antibacterial components, is not sufficient in reducing oral bacterial growth.

2. The growth of *S. aureus* varied across treatments. In T1, bacterial growth was significantly suppressed,

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

as shown by a large zone of inhibition. Meanwhile, there was visible bacterial growth in T2, T3, and the control group, indicating that these treatments were not effective in reducing bacterial growth.

3. The control group showed no inhibition, indicating that *S. aureus* may still exhibit resistance to certain commercial mouthwashes. This lack of antimicrobial activity suggests that not all mouthwash formulations are effective against *S. aureus*, and highlights the need for further investigation into the specific ingredients or concentrations required to inhibit its growth.

4. The findings indicated that T1, which has a 100% honey extract, is significantly different from T2, T3, and the control group. This can be attributed to honey's high sugar composition, low pH, and bioactive compounds, particularly H_2O_2, indicating that it has high antimicrobial activity against *S. aureus*. However, T2, T3, and the control group had no zones of inhibition, which indicates that none of them was capable of reducing bacterial growth.

RECOMMENDATIONS

1. For the Department of Health officials**,** this research has the potential to offer the DOH an economical approach to enhance oral hygiene. It might also provide valuable information for the promotion of innovative natural oral care products. These products could be incorporated into nationwide oral health initiatives aimed at decreasing oral bacteria.

2. Manufacturers of pharmaceuticals and oral care products would find the results especially valuable, as they highlight opportunities to develop innovative, natural, organic, and environmentally friendly oral care solutions that meet growing consumer demand and enhance market competitiveness.

3. For Dental care Professionals, this research might offer important insights for dentists looking for more effective, natural, and sustainable methods to prevent oral diseases. It could aid in the conduct on new researches on new therapies or alternatives to chemical dental treatments.

4. This study can act as a foundation or reference for future researchers to build upon, motivating them to delve further into discovering future remedies that enhance the development of efficient, natural, and accessible solutions for oral health issues, especially in areas such as Southeast Asia, where conventional medicine holds significant importance in healthcare. Also, future researchers can explore the long-term effectiveness of honey in oral therapy, its synergism with other natural agents, like fungal or plant extracts, to augment antibacterial effects. They can also explore the best concentration of split gill mushroom extract and its ability to improve the effectiveness of honey. Other studies can examine the effect of honey therapy on oral disease states and acceptability in different cultures.

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Ametur Cor Jesu, Ametur Cor Mariae!

Approval Sheet

This study entitled **"Oracure: Efficacy of Honey and Split Gill Mushroom** (Schizophyllum Commune) **Extract In Reducing** Staphylococcus Aureus **Growth,**" Prepared and Submitted by **Princess Dianne P. Abogar, Iya S. Banaag, Quennie S. Cordero, Khrian Glen Yrel P. Dumigsi, Kaycee M. Gique, Earl Jemarie J. Mijares, Cynthia B. PAYAN, JAREN P. SOSMENA** in partial fulfillment of the requirements in the Practical Research, is hereby accepted.

CLEFORD JAY D. BACAN, MAEd-MT

Advise_____

Date Signed

ALMIRA A. BATULANON, MEd-LT

Member

_____

Date Signed

NIEKY MAE GUMERA, LPT

Member

_____

Date Signed

MARK JOBERT C. ELLAGA, LPT

Chairman

_____

Date Signed

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Accepted and approved in partial fulfillment of the requirements for the Practical Research in the Senior High School Program.

JUN REY DEQUIÑA, MATCC

School Principal

Basic Education Department

Cor Jesu College, Inc.

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Date Signed

LIST OF TABLES

LIST OF APPENDICES

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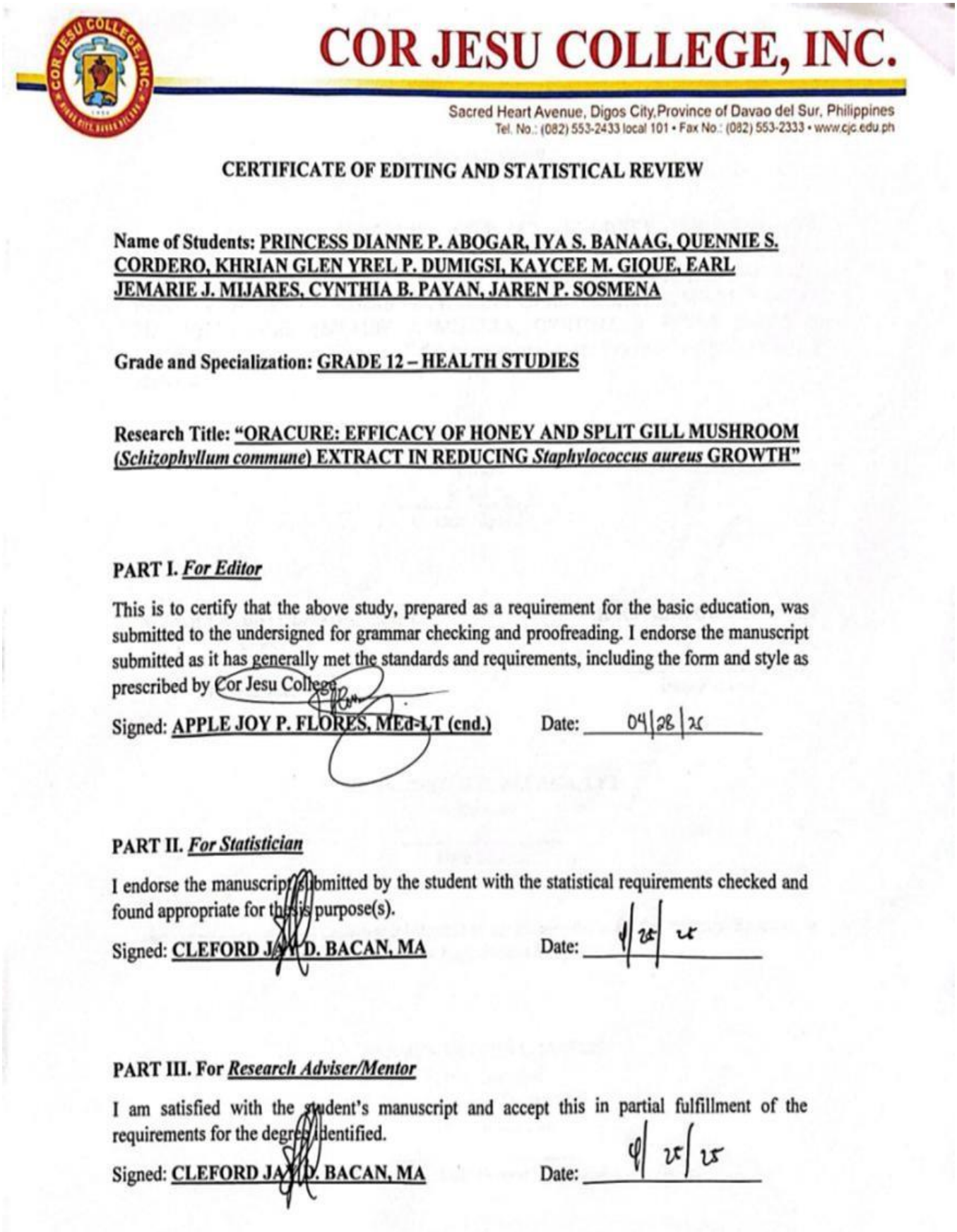
APPENDICES

APPENDIX A

CERTIFICATE OF EDITING AND STATISTICAL REVIEW



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Tel. No.: (082) 553-2433 local 101 • Fax No.: (082) 553-2333 • www.cjc.edu.ph

CERTIFICATE OF EDITING AND STATISTICAL REVIEW

Name of Students: PRINCESS DIANNE P. ABOGAR, IYA S. BANAAG, QUENNIE S. CORDERO, KHRIAN GLEN YREL P. DUMIGSI, KAYCEE M. GIQUE, EARL JEMARIE J. MIJARES, CYNTHIA B. PAYAN, JAREN P. SOSMENA

Grade and Specialization: GRADE 12 – HEALTH STUDIES

Research Title: "ORACURE: EFFICACY OF HONEY AND SPLIT GILL MUSHROOM (*Schizophyllum commune*) EXTRACT IN REDUCING *Staphylococcus aureus* GROWTH"

PART I. ***For Editor***

This is to certify that the above study, prepared as a requirement for the basic education, was submitted to the undersigned for grammar checking and proofreading. I endorse the manuscript submitted as it has generally met the standards and requirements, including the form and style as prescribed by Cor Jesu College.

Signed: APPLE JOY P. FLORES, MEd-LT (cnd.) Date: 04/28/25

PART II. ***For Statistician***

I endorse the manuscript submitted by the student with the statistical requirements checked and found appropriate for this is purpose(s).

Signed: CLEFORD JAY D. BACAN, MA Date: 4/25/25

PART III. For ***Research Adviser/Mentor***

I am satisfied with the student's manuscript and accept this in partial fulfillment of the requirements for the degree identified.

Signed: CLEFORD JAY D. BACAN, MA Date: 4/25/25

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

APPENDIX B.1

LETTER TO THE PRINCIPAL

COR JESU COLLEGE, INC.
Sacred Heart Avenue, Digos City,Province of Davao del Sur, Philippines
Tel. No.: (082) 553-2433 local 101 • Fax No.: (082) 553-2333 • www.cjc.edu.ph

January 18, 2025

JUN REY DEQUIÑA, MATCC
School Principal
Basic Education Department
Cor Jesu College, Inc., Sacred Heart Avenue, Digos City

We are students Senior High School students from Cor Jesu College, Inc. and are presently conducting a research paper entitled **"ORACURE: Efficacy of Honey and Split Gill Mushroom (*Schizophyllum commune*) Extract in Reducing *Staphylococcus Aureus* Growth"** which is a partial fulfillment for requirements in Practical Research 3. In this connection, we would like to ask your permission to conduct the study by experimenting and observing in the Digos Doctors Hospital. The study will be conducted for the whole duration of January starting on January 20, 2025. Rest assured that all information derived here will be treated with outmost confidentiality. Thank you very much and God bless.

Yours sincerely,

ABOGAR, PRINCESS DIANNE P.
BANAAG, IYA S.
CORDERO, QUENNIE S.
DUMIGSI, KHRIAN GLEN YREL P.
GIQUE, KAYCEE M.
MIJARES, EARL JEMARIE J.
PAYAN, CYNTHIA B.
SOSMENA, JAREN P.
Noted by:

CLEFORD JAY D. BACAN, MA
Research Teacher

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

APPENDIX B.2

LETTER TO HOSPITAL

COR JESU COLLEGE, INC.
Sacred Heart Avenue, Digos City,Province of Davao del Sur, Philippines
Tel. No.: (082) 553-2433 local 101 • Fax No.: (082) 553-2333 • www.cjc.edu.ph

January 27, 2025

ARA RAMEA D. AMAHAN, RMT
Chief Medical Technologist
Laboratory Department
Digos Doctors Hospital,

We are students Senior High School students from Cor Jesu College, Inc. and are presently conducting a research paper entitled **"ORACURE: Efficacy of Honey and Split Gill Mushroom** (*Schizophyllum commune*) **Extract in Reducing** *Staphylococcus Aureus* **Growth"** which is a partial fulfillment for requirements in Practical Research 2. In this connection, we would like to store and test our study in your facility by January 28, 2025. Rest assured that all information derived here will be treated with utmost confidentiality.

Thank you very much and God bless.

Yours sincerely,

ABOGAR, PRINCESS DIANNE P.
BANAAG, IYA S.
CORDERO, QUENNIE S.
DUMIGSI, KHRIAN GLEN YREL P.
GIQUE, KAYCEE M.
MIJARES, EARL JEMARIE J.
PAYAN, CYNTHIA B.
SOSMENA, JAREN P.

Noted by:

CLEFORD JAY D. BACAN, MA
Research Teacher

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

APPENDIX C

FINANCIAL STATEMENT

COR JESU COLLEGE, INC.
Sacred Heart Avenue, Digos City,Province of Davao del Sur, Philippines
Tel. No.: (082) 553-2433 local 101 • Fax No.: (082) 553-2333 • www.cjc.edu.ph

PRACTICAL RESEARCH 2
FINANCIAL STATEMENT

Research Title:	**ORACURE: EFFICACY OF HONEY AND SPLIT GILL MUSHROOM (*Schizophyllum commune*) EXTRACT IN REDUCING *Staphylococcus aureus* GROWTH**
Grade and Section	12-STEM 1
Submission Date:	November 20, 2024

Particulars	Price	Quantity	Amount
Honey	₱200.00	1 (350mL)	₱200.00
Split Gill Mushroom	₱0.00	2.7kg	₱0.00
Staphylococcus aureus	₱300.00	1	₱300.00
Listerine Mouthwash	₱76.00	1 (100mL)	₱76.00
Surgical Gloves	₱34.00	3 pairs	₱102.00
Distilled Water	₱25.00	2 (500mL)	₱50.00
Stirring Rod	₱100.00	1	₱100.00
Glass Jar	₱25.00	4	₱100.00
Petri Dish	₱100.00	12	₱1,200.00
		TOTAL	₱ 2,128.00

Prepared by

CYNTHIA B. PAYAN
Group Leader

Noted by

CLEFORD JAY D. BACAN, MAEd-MT
Research Teacher

Approved by

JUN REY D. DEQUIÑA, MATCC
School Principal

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

APPENDIX D

SPSS RESULTS

(A)

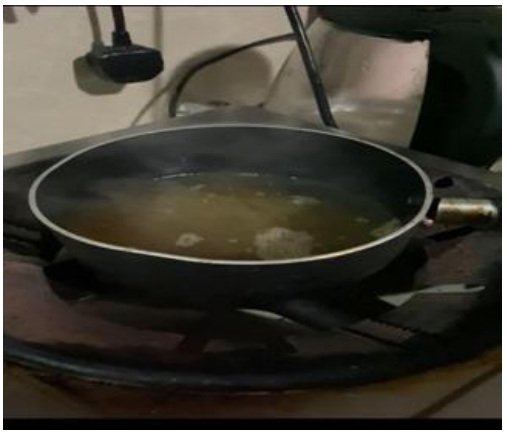


Figure: (a) Extraction of split gill mushroom

(B)

Figure: (b) Extraction of Honey

(C)

Figure: (c) Transfer of S. aureus bacteria to a Petri Dish

(D)

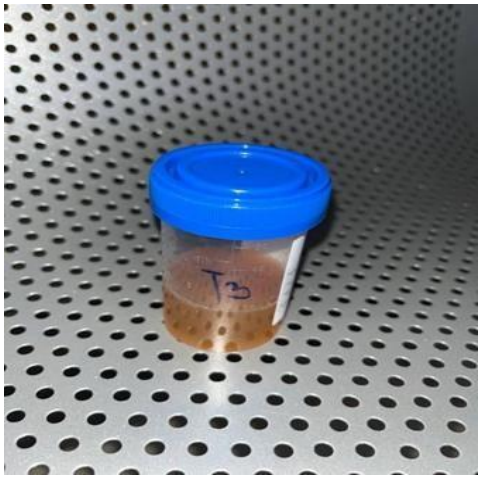


Figure: (d) Preparation of honey and split gill mushroom mixture

(E)

Figure: (e) Antibacterial Assay on S. Aureus Using agar diffusion method

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

(F)

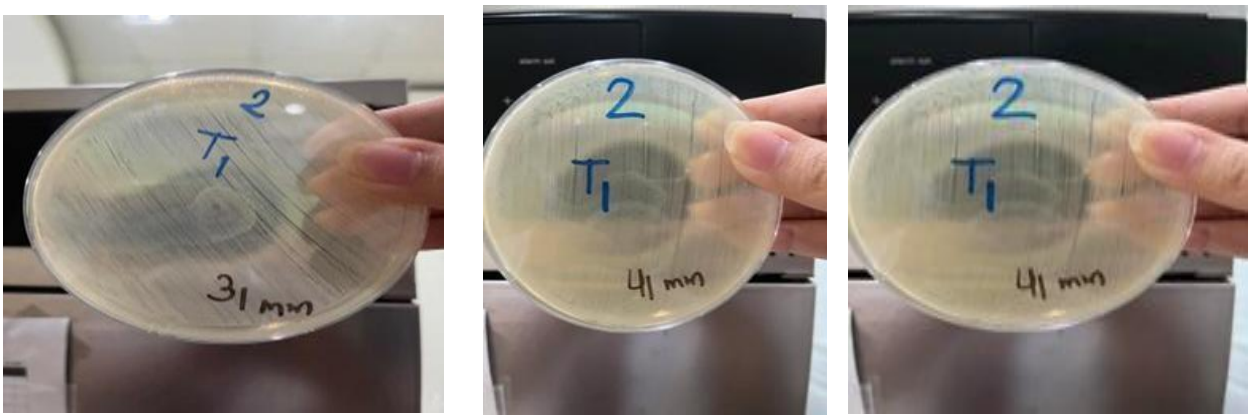


Figure: (f) Antibacterial Activity of honey extract (T1) Against *S. aerus.*

(G)

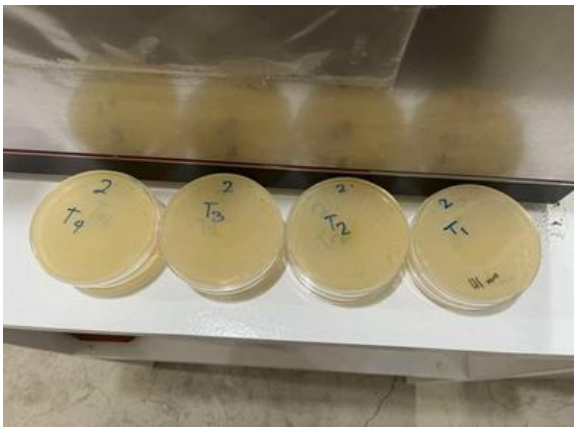


Figure: (g) Assessment of Bacterial Resistance and Extract Efficacy

APPENDIX E

PLAGIARISM REPORT

ORACURE EFFICACY OF HONEY AND SPLIT GILL MUSHROOM (Schizophyllum commune) EXTRACT IN REDUCING Staphylococcus aureus GROWTH

ORIGINALITY REPORT

9%	6%	4%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.geeksforgeeks.org Internet Source	1%
2	www.ncbi.nlm.nih.gov Internet Source	1%
3	journalarticle.ukm.my Internet Source	1%
4	pmc.ncbi.nlm.nih.gov Internet Source	1%
5	ujpronline.com Internet Source	<1%
6	Submitted to Tangara School for Girls Student Paper	<1%
7	www.coursehero.com Internet Source	<1%

APPENDIX F

SPSS RESULTS

SPSS RESULTS

Descriptives

ZOI

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	3	37.6667	5.77350	3.33333	23.3245	52.0088	31.00	41.00
2.00	3	.0000	.00000	.00000	.0000	.0000	.00	.00
3.00	3	.0000	.00000	.00000	.0000	.0000	.00	.00
4.00	3	.0000	.00000	.00000	.0000	.0000	.00	.00
Total	12	9.4167	17.21235	4.96878	-1.5195	20.3529	.00	41.00

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ZOI	.458	12	.000	.577	12	.000

a. Lilliefors Significance Correction

Nonparametric Tests

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of ZOI is the same across categories of Treatment.	Independent-Samples Kruskal-Wallis Test	.013	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .050.

Independent-Samples Kruskal-Wallis Test

ZOI across Treatment

Independent-Samples Kruskal-Wallis Test Summary

Total N	12

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Test Statistic	10.800[a]
Degree Of Freedom	3
Asymptotic Sig.(2-sided test)	.013
a. The test statistic is adjusted for ties.	

Pairwise Comparisons of Treatment					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
2.00-1.00	6.000	2.236	2.683	.007	.044
3.00-1.00	6.000	2.236	2.683	.007	.044
4.00-1.00	6.000	2.236	2.683	.007	.044
2.00-3.00	.000	2.236	.000	1.000	1.000
2.00-4.00	.000	2.236	.000	1.000	1.000
3.00-4.00	.000	2.236	.000	1.000	1.000
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significance (2-sided tests) are displayed. The significance level is .05.					
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.					

CURRICULUM VITAE

PERSONAL BACKGROUND

Name : PRINCESS DIANNE P. ABOGAR

Birth Date : May 2, 2007

Birth Place : Purok. Nangka-A, San Miguel, Digos City

Address : Purok. Nangka-A, San Miguel, Digos City

Civil Status : Single

Religion : Southern Baptist

EDUCATIONAL BACKGROUND

Elementary : Balutakay Elementary School
Balutakay, Hagonoy, Davao Del sur

Junior High School : Prime Innovation School of South Davao, Inc
Baranggay. Tiguman, Digos City, Davao del Sur

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Senior High School : Cor Jesu College, Inc.
Sacred Heart Ave., Digos City, Davao del Sur

CURRICULUM VITAE

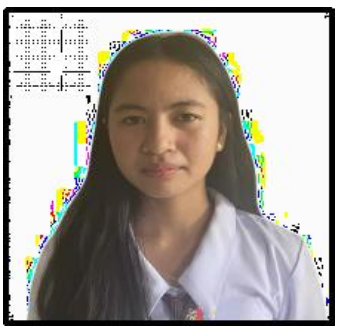
PERSONAL BACKGROUND

Name	:	IYA S. BANAAG
Birth Date	:	December 2, 2006
Birth Place	:	Doña Aurora ext. Digos City
Address	:	Baranggay Colorado, purok 6, Digos City
Civil Status	:	Single
Religion	:	Roman Catholic

EDUCATIONAL BACKGROUND

Elementary	:	Ramon Magsaysay Central Elementary School Ramon Magsaysay St, Dugos City, 8002 Davao del Sur With Honors
Junior High School	:	Digos City National Highschool Rizal Avenue, Digos City 8002 Davao del Sur With Honors
Senior High School	:	Cor Jesu College Inc. Sacred Heart Ave, Digos City, 8002, Davao del Sur With Distinction

CURRICULUM VITAE



PERSONAL BACKGROUND

Name : QUENNIE S. CORDERO

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Birth Date : November 27, 2006

Birth Place : Amas, Kidapawan City

Address : Roxas Extension Zone 3, Digos City, Davao del Sur

Civil Status : Single

Religion : Roman catholic

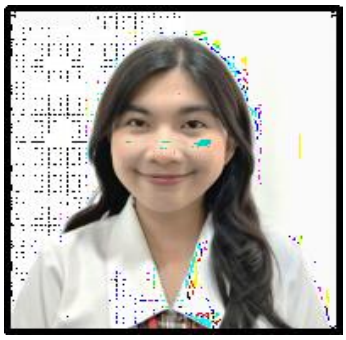
EDUCATIONAL BACKGROUND

Elementary : **R**amon Magsaysay Central Elementary School
Monarca building, Magsaysay Street. Digos City

Junior High School : **D**igos City National High School
Rizal Ave, Digos City, Philippines

Senior High School : Cor Jesu College Inc.
Sacred Heart Ave., Digos City, Philippines

CURRICULUM VITAE



PERSONAL BACKGROUND

Name : Khrian Glen Yrel P. Dumigsi

Birth Date : June 16, 2006

Birth Place : Medical Center of Digos Cooperative

Address : 1081 Datoc Compound, Zone 1, Digos City, Davao del Sur

Civil Status : Single

Religion : UCCP - Christianity

EDUCATIONAL BACKGROUND

Elementary : Digos City Central Elementary School
Digos City, Davao del Sur

Junior High School : Digos City National High School
Rizal Avenue, Zone II, Digos City, Davao del Sur

Senior High School : Cor Jesu College
Sacred Heart Avenue, Digos City, Davao del Sur

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

CURRICULUM VITAE

PERSONAL BACKGROUND

Name : Kaycee M. Gique

Birth Date : November 17, 2006

Birth Place : Mabini St. Digos City

Address : Purok Seraguelas, Sinawilan Badiang, Digos City, Davao del Sur

Civil Status : Single

Religion : Catholic

EDUCATIONAL BACKGROUND

Elementary : Badiang Sinawilan Elementary School, Sinawilan, Digos City, Davao del Sur

Junior High School : Digos City National High School. Rizal Avenue, Digos City 8002 Davao del Sur

Senior High School : Cor Jesu College, Inc. Sacred Heart Avenue, Digos City

CURRICULUM VITAE

PERSONAL BACKGROUND

Name : Earl Jemarie J. Mijares

Birth Date : November 27, 2005

Birth Place : Digos City

Address : Dahlia Street, Población Uno, Bansalan Davao del Sur

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue V May 2025

Civil Status : Single

Religion : Catholic

EDUCATIONAL BACKGROUND

Elementary : Holy Cross of Bansalan College
Dahlia Street, Poblacion Uno Bansalan Davao del Sur

Junior High School : St Mary's College of Bansalan Inc
Dahlia Street, Poblacion Uno Bansalan Davao del Sur

Senior High School : Cor Jesu College
Sacred Heart Ave, Digos City Davao del Sur

CURRICULUM VITAE

PERSONAL BACKGROUND

Name : Cynthia B. Payan

Birth Date : January 23, 2007

Birth Place : Labon, Sulop, Davao Del Su

Address : Purok Caimito, Punta Biao Cogon, Digos City, 8002

Civil Status : Single

Religion : Roman Catholic

EDUCATIONAL BACKGROUND

Elementary : Banate Central Elementary School
Banate, Malungon, Sarangani Province

Junior High School : Banate National High School
Banate, Malungon, Sarangani Province

Senior High School : Cor Jesu College
Sacred Heart Ave, Digos City Davao del Sur