



Visayas State University Baybay City, Leyte, 6521 Philippines Phone: Trunkline 565-0600, local 1119 Email: aricenter@vsu.edu.ph Website: www.vsu.edu.ph

### QUARTERLY RESEARCH PROGRESS REPORT QUARTER: 1st (JAN - MARCH 2024)

Research Title: Biological Activity and Chemistry of Essential Oils for Agriculture, Pharmaceuticals and Industry

#### I. Program/Project/Study Objectives:

**A.** Develop products with enormous agricultural, pharmaceutical, and medicinal importance thereby opening a lot of opportunities for our agricultural students, farmers, food manufacturers and medical industries.

#### II. Relevance to VSU & College's Thrust and Priorities:

A. This project will definitely respond to the objectives of the VSU Internationalization Programs especially in the aspects of increasing collaboration with foreign HEIs on research; providing access to our students and staffs for training and studies abroad; increasing the number of foreign researchers and visiting scientists in the university, establish joint degree programs with foreign universities.

### III. Highlights of accomplishments within the quarter

A. Targets for the quarter

A1. Sample collection of previously identified different native trees for essential oil extraction and voucher specimen.

A2. Identification and collection of potentially essential oil containing native trees with ethnobotanical uses.

B. Highlights of accomplishments

B1. Collection and hydrodistilation of the eleven (11) oil-bearing tree species.

B2. Balukanag (Chisocheton cumingianus) and Bayag-usa (Voanga globosa) are additional species to the existing eleven (11) native tree species.





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# B1. Collection and identification of prospective essential-oil containing tree species

The collection and extraction is ongoing to collect sufficient volume of essential oils (Figure 2) required for antimicrobial, cytotoxicity, and the determination of the chemical composition of essential oils. Collected samples were hydrodistilled (Figure 1). The extracted essential oils will be submitted to the collaborating university, Czech University of Life Sciences, Prague for antimicrobial activity screening and assessment of toxicity to human cell lines and for GC-MS analysis for the chemical composition analysis.



Figure 1. The hydrodistillation set-up for essential oil extraction



Figure 2. The essential oils of the different native tree species collected within VSU campus and foothill of Mt. Pangasugan, Baybay City, Leyte





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 Balukanag (Chisocheton cumingianus) a member of the Meliaceae family and Bayag-usa (Voangca globosa) under Apocynaceae family (Figure 3) were identified and collected within VSU campus. Leaf and fruit samples were cleaned, dried and extracted.



Figure 3. (a) Balukanag (Chisocheton cumingianus) (b) Bayag-usa (Voangca globosa)

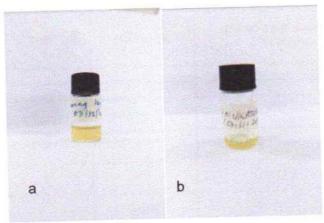


Figure 4. Essential oil of Balukanag (Chisocheton cumingianus) (a) leaf and (b) fruit





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#### IV. Physical Report of Operation A. Research Program

|  | Particulars/Name and Brief Description of<br>Utilized/ Commercialized Technologies | Number |
|--|--|--------|
| Outcome Indicator  |  |        |
| Number of research outputs<br>utilized by the industry or by<br>other beneficiaries                                |  | d      |
| Output Indicator   |  |        |
| Number of research outputs completed within the year   |  |        |
| 2. Percentage of research outputs published in internationally-referred or CHED recognized journal within the year |  |        |

### B. Technologies/Information patented and commercialized

| Technology<br>Invention(s) New<br>Information | Invention Patent | Date of | Utilization of Invention  |  | Name of Commercial<br>Product |
|---|------------------|---------|---------------------------|--|-------------------------------|
|   | Number           | Issue   | Issue Development Service |  |                               |
| A. Technology<br>Invention(s)                 |                  |         |                           |  |                               |
| B. New<br>Information                         |                  |         |                           |  |                               |

### C. Research papers published (Identify if articles were for Research, Extension, Innovation or MSc/ PhD Studies)

|  | Title | Author (s) | Date/Year/Publication/<br>Publisher | Remarks<br>(if Research,<br>Extension,<br>Innovation, Thesis,<br>MSc/PhD |
|--|-------|------------|-------------------------------------|--|
| a. Refereed Journal                        |       |            |                                     |  |
| Institutional                              |       |            |                                     |  |
| National                                   |       |            |                                     |  |
| International                              |       |            |                                     |  |
| b. Semi-popular publ'n (newsletter, etc.)  |       |            |                                     |  |
| c. Popularized pub'In (technoguides, etc.) |       |            |                                     |  |
| d. Book Chapter/s                          |       |            |                                     |  |
| e. Books                                   |       |            |                                     |  |





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#### D. Citation

| Title of Research Output/ Published & Vol. Journal Journal Issue/ Articles/ Book  Title of Journal Keyword Year |          | Researcher<br>(s) | Citation Details                                    |   |                     |                                  |                            |          |  |
|---|----------|-------------------|---|---|---------------------|----------------------------------|----------------------------|----------|--|
|   | Keywords |                   | Author(s)<br>Who<br>Cited the<br>Research<br>Output | Title of<br>Article<br>Where the<br>Research<br>Output<br>Was Cited | Title of<br>Journal | Vol. /<br>Issue /<br>Page<br>No. | City/<br>Year<br>Published | Publishe |  |
|   |          |                   |   |   |                     |                                  |                            |          |  |

V. Issues, Problems, and Recommendations

|                | with                  |
|----------------|-----------------------|
| Submitted by   | CHINELO M. CARDAÑO    |
| •              | Component Leader      |
| Endorsed by    | MA. THERESA P. LORETO |
|                | Center Director       |
| Date Submitted | March 13, 2024        |
| Received by OV | PREI-RPO:             |
| Date Received  | :                     |