SCREENING FOR THE ANTIBACTERIAL ACTIVITY OF SELECTED WEEDS AGAINST MOTILE WATERBORNE BACTERIA FROM CLSU

ANDREA G. LEGASPI

An Undergraduate Thesis Submitted to the Faculty of the Department of Biological Sciences,
College of Arts and Sciences, Central Luzon State University,
Science City of Munoz, Nueva Ecija, Philippines,
In Partial Fulfillment of the Requirements
for the Degree of

BACHELOR OF SCIENCE IN BIOLOGY
(Major in Microbiology)

JULY 2019

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF APPENDIX TABLES

LIST OF APPENDIX FIGURES

ABSTRACT

LEGASPI, ANDREA G., Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, **JULY 2019, SCREENING FOR THE ANTIBACTERIAL ACTIVITY OF SELECTED WEEDS AGAINST MOTILE WATERBORNE BACTERIA FROM CLSU**

Adviser: FEDERICO G. PINEDA, M.Sc.

Waterborne diseases are increasingly taking the attention of the public health, waterborne from the different environment. Two motile waterborne bacteria from the sewage inside the CLSU near the lady's dorm 8 were isolated and identified and used to observe the antibacterial property as eradicant and protectant of the three identified weeds that was obtained inside CLSU near the sewage of lady's dorm 8 are dried and powdered, the plant used ethanol as the solvent for extraction. Ethanol at 95% was used as negative control, and cefotaxime was used as positive control. The three (3) extracts as eradicant and protectant are not effective against *Enterobacter cloacea* and *Aeromonas hydrophila*. Therefore the phytochemical of the weed extracts are not effective against *E. cloacea* and *A. hydrophila*. Old practice of medicinal plants for treating various diseases still has potential source of anti-effective.

LITERATURE CITED

Anitha, R., & Kanimozhi, S., (2012). Pharmacognistic evaluation of *Alternanthera sessilis (L)* R. Br. ex. DC. *Pharmacognosy Journal*, 4(8), 31-34.

Arirudran, B., Saraswathy, A., & Krishnamurthy, V., (2011). Antimicrobial activity of ruellia tuberosa L. (Whole Plant). *Pharmacognosy Journal,* 3, 91-95.

Arirudran, B., & Saraswathy, A., & Krishnamurthy, V., (2011). Pharmacognistic and preliminary phytochemical on *Ruellia tuberosa. Pharmocognosy Journal*, 3(22), 29-34

Bhuvaneswari, S., Aravind, R., Kaviyarasan, V., Kalaivanan, K., Hariram, S.K., (2011). A comparative study on antibacterial activity of common weeds. *International Journal of Pharma and Bio Sciences,* 2, 677-683.

Castillo, F.Y.R., Muro, A.L., Mario, J., Garneau, P., Gonzalez, F.J.A., Harel, J., & Barrera, A.L.G., (2015). Waterborne pathogens: detection methods and challenges. *Journal Pathogens,* 4, 307- 334.

Chotani, D.L., Patel, M.B., Mishra, S.H., & Vaghasiya, H.U., (2010). Review on *ruellia tuberosa* (Cracker plant). *Pharmacognosy Journal,* 2, 506-512.

Cipriano, R. C., Bullock, G. L., & Pyle, S. W., (2001). *Aeromonas hydrophila* and motile *Aeromonad* septicemias of fish. United States Department of the Interior Fish and Wildlife Service Division of Fishery Reasearch Washington, D. C. 20240, 68 (1998), 1-24.

Citterio, B., & Biavasco, F., (2015). *Aeromonas hydrophila* virulence. *Taylor and Francis group LLC, virulence,* 6(5), 417-418.

Dahanukar, S.A., Kulkarni, R.A. & Rege, N.N., (2000). Pharmacology of medicinal plants and natural products. *Indian Journal of Pharmacology*, 32, S81–118.

Ferrell, J. A., MacDonald, G. E., & Leon, R., (2000). Benghal dayflower (*Commelina benghalensis, L.) Identification and Control, Agronomy Department*, UF/IFAS Extension SS AGR 223.

Hendra, R., Ahmad, S., Sukari, A., Shukor, M. Y., & Oskoueian, E., (2011). Flavonoid analyses and antimicrobial activity of various parts of *Phaleria Macrocarpa (Scheff.) Boerl* Fruit. *International Journal of Molecular Sciences*, 12, 3422-343.

Hossain, A.I., Faisal, M., Rahman, S., Jahan, R., & Rahmatullah, M., (2014). A preliminary evaluation of antihyperglycemic and analgesic activity of alternanthera sessilis aerial parts. *Biomedical central C Complementary and Alternative Medicine,* 14(169), 1472-6882.

Ibrahim, J., Ajaegbu, V.C., & Egharevba, H.O., (2010). Pharmacognistic and phytochemical analysis of *Commelina benghalensis L.* Ethnobotanical Leaflets, 14, 610-615.

Jalalpure, S.S., Agrawal, N., Patil, M.B., Chimkode, R., & Tripathi, A., (2008). Antimicrobial and wound healing activities of leaves of Alternanthera sessilis Linn. *International Journal of Green Pharmacy*, 2(3), 141-144.

Jin, D., kong, X., Cui, B., Jin, S., Xie, Y., Wang, X., & Deng, Y., (2018). Bacterial communities and potential waterborne pathogens within the typical urban surface waters. *Scientific Reports,* 8, 1- 9.

Khare, C. P., (2007). Indian medicinal plants: an illustrated dictionary. Springer, *Berlin,Heidelberg,* 1, 181-182.

Leclerc, H., Schwartzbrod, L., & Dei-cas, E., (2002). Microbial agents associated in waterborne diseases. *Critical Revies in Microbiology,* 28(4), 371-409.

Michael Janda, J., & Abbot, S.L., (2010). The genus *Aeromonas:* taxonomy, pathogenicity, and infection. *Clinical Microbiologist Reviews,* 23(1), 35-75.

Nascimento, G. G., Locatelli, J., Freitas, P. C., & Silva, G. L., (2000). Antibacterial activity of plant extracts and phytochemicals on antibiotic-resistant bacteria. *Brazilian Journal of Microbiology*, 31, 247-256.

Nayak, P., Nayak, S., Kar, D.M., & Das, P., (2010). Pharmacological evaluation of ethanolic extracts of the plant *Alternanthera sessilis* against temperature regulation. *Journal of Pharmacy Research*, 3(6), 1381-1383.

Poppof, M., & Veron, M., (1976). A taxonomic study of the *Aeromonas hyrdophila Aeromonas punctate* group. *Journal of General Microbiology,* 94, 11-22.

Prakash, K.H., Harini, A.R., & Prasanna (2014). A review on insulin plant (*Costus igneus Nak). Pharmacognosy Reviews*, 8(15), 67–72.

Raquibul Hasan, S. M., Mokarram Hossain, Md., Akter, R., Jamila, M., Ehsanul Hoque Mazumder, Md., & Rahman, S., (2009). Sedative and anxiolytic effects of different fractions of the *Commelina benghalensis Linn. Original Article, Drug Discovery Therapeutics*, 3(5), 221-227.

Regli, A.N., & Pages, J.M., (2015). *Enterobacter aerogenes* and *enterobacter cloacea;* versatile bacterial pathogens confronting antibiotic treatment. *Frontiers in Microbiology,* 6(392), 1-10.

Subhashini, T., Krishnaveni, B., & Srinivas Reddy, C., (2010). Anti- Inflammatory Activity of Leaf Extracts of *Alternanthera sessilis*. *Hygeia Journal for drugs and medicine*, 2(1), 54-56.