





Anti-inflammatory and Antibacterial Property of *Chromolaena odorata* Ethanolic Crude Leaf Extract

Jaina Joie O. Manaloto, Junior Brian T. Boyer, Christopher Kyle G. Hipolito, Marc Rendell Barrera and Analiza J. Molina, Phd

Pharmacy Department, College of Allied Medical Professions, Angeles University Foundation, McArthur Highway, Angeles City, 2009 Philippines



Materials and methods



Materials and methods















RESULTS AND DISCUSSIONS

Figure.1. Zones of inhibition of (a) the positive control piperacillin and (b) the crude leaf extract of *C. odorata* against *P. aeruginosa,* while (c) the nutrient broth, being the negative control manifested no inhibition zones.



Figure.2. Photos showing the relative comparison between the positive controls (a) piperacillin to that of the (b) *C. Odorata* extract against *K. pneumoniae*. The appearance of any zone is not seen in the (c) nutrient broth.



Figure.3. Photos showing the relative comparison between the positive controls (a) piperacillin to that of the (b) *C. Odorata* extract against *K. pneumoniae*. The appearance of any zone is not seen in the (c) nutrient broth.



 Table 1. Anti-inflammatory activity of Ethanolic extract of C. Odorata (Experimental) and

 Ibuprofen (Positive Control) in Albino mice

Group	Mean \pm SD of the reaction time	p-value with experimental
Experimental	$75.6 \pm 6.8 \text{ sec}$	
Positive control	70.7 ± 12.7 sec	0.59
Environmental	$59 \pm 10.5 \text{sec}$	0.04



Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.



Tukey HSD ^a							
		Subset for alpha = 0.05					
replicates	Ν	1	2				
negative control	3	.0000					
positive control	3		6.6667				
experimental	3		6.9000				
Sig.		1.000	.602				

ΡΑ

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.



	SA		
Tukey HSDª			
		Subset for alpha = 0.05	
replicates	Ν	1	2
negative control	3	.0000	
experimental	3		10.6667
positive control	3		11.0000
Sig.		1.000	.483

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 3.000.



		КР	PA	SA	
	Positive Control	0.00	0.00	0.00	
Negative Control	Experimental	0.00	0.00	0.00	K
	Negative Control	0.00	0.00	0.00	
Positive Control	Experimental	0.237	0.602	0.483	
	Negative Control	0.00	0.00	0.00	3
Experimental	Positive Control	0.237	0.662	0.483	

CONCLUSIONS

- Inhibition of gram negative/positive bacteria P. aeruginosa, K. pneumoniae, and S. Aureus
- Prolong sensitivity to pain and highly suppress inflammatory responses.
- Justifies the traditional use of C. odorata as a medicinal plant for wound healing purposes.



Recommendations

- Concentration of Ethanolic extract
- Phytochemical screening



References

[1] M.N. Vaisakh and Anima Pandey. (2012). The Invasive Weed with Healing Properties: A Review on Chromolaena odorata. International Journal of Pharmaceutical Sciences and Research, 3(1).

[2] Balangcod, T.D., and Balangcod, A, D. (2011). Ethnomedicinal knowledge of plants and healthcare practices among the Kalungaya tribe in Tinoc, Ifugao, Luzon, Philippines. Indian Journal of Traditional Knowledge, 10 (2).

[3] Morilla, L., Sumaya, N., Rivero, H., and Madamba, M. (2014). Medicinal Plants of the Subanens in Dumingag, Zamboanga del Sur, Philippines. International Conference on Food, Biological, and Medical Sciences.

[4] Sahid, I.B., and Sugau, J.B. (1993). Allelopathic Effect of Lantana (Lantana Camara) and Siam Weed (Chromolaena odorata) on Selected Crops. Weed Science Society of America, 41 (2).
[5] Balangcod T.D., and Balangcod, K.D. (2015). Ethnomedicinal Plants in Bayabas, Sablan, Benguet, Province, Luzon, Philippines.

[6] Gaillard, J. (2006). Traditional Societies in the Face of Natural Hazards: The 1991 Mt. Pinatubo Eruption and the Aetas of the Philippines. International Journal of Mass Emergencies and Disasters, 24 (1): 10–13.

[7] Raina, R., Parwez, S., Verma, P.K., and Pankaj, N.K. (2008). Medicinal Plants and their Role in Wound Healing. Online Veterinary Journal, 3(1).

[8] Olowa, L., and Demayo, C. (2015). Ethnobotanical Uses of Medicinal Plants Among the Muslim Maranaos in Iligan City, Mindanao, Philippines. Advances in Environmental Biology, 9 (27).

[9] Gruyal, G., Del Rosario, R., and Palmes, N. (2014). Ethnomedicinal Plants Used by Residents in Northern Surigao del Sur, Philippines. Nat Prod Chem Res, 2 (4).

[10] Hataichanok Pandith, Suchitra Thongpraditchote, Yuvadee Wongkrajang & Wandee Gritsanapan (2012) In vivo and in vitro hemostatic activity of Chromolaena odorata leaf extract, Pharmaceutical Biology, 50:9.

[11] McHenry, M.P., Balilla, V.S., McHenry, J.A., Parkinson, R.M., and Banal, D.T. (2014). Indigenous Philippine Aeta Magbukún tribe's traditional forest use and adaptation to encroaching cultures, land uses, and cash-based agriculture and forestry. Murdoch Research Repository.

[12] Tindowen, D.C. (2016). The Economic Life of the Aetas of Northern Philippines. Khazar Journal of Humanities and Social Sciences, 19 (4).

[13] Gobrin, G., and Andin, A. Development Conflict: The Philippine Experience. Minority Rights Group International.

[14] Vital, P.G., and Rivera, W.L. (2009). Antimicrobial activity and cytotoxicity of Chromolaena odorata (L. f.) King and Robinson and Uncaria perrottetii (A. Rich) Merr. Extracts. Journal of Medicinal Plants Research, 3(7).

[15] Olowa, L.F., and Nuneza, O.M. (2013). Brine Shrimp Lethality Assay of the Ethanolic Extracts of Three Selected Species of Medicinal Plants from Iligan City, Philippines. International Research Journal of Biological Sciences, 2(11): 74-77.

[16] Asomugha RN, Okafor PN, Ijeh II, Orisakwe OE, Asomugha AL, Ndefo JC. Toxicological Evaluation of Aqueous Leaf Extract of Chromolaena Odorata in Male Wistar Albino Rats. J App Pharm Sci, 2013; 3 (12): 089-092.

[17] Asomugha, R.N., Ezejiofor, A.N., Okafor, P.N., and Ijeh, I.I. (2015). Acute and Cytotoxicity Studies of Aqueous and Ethanolic Leaf Extracts of *Chromolaena odorata*. Pakistan Journal of Biological Sciences, 18(1): 46–49.

[18] S. L. Sukanya, J. Sudisha, P. Hariprasad, S. R. Niranjana, H. S. Prakash, and S. K. Fathima. (2009) Antimicrobial activity of leaf extracts of Indian medicinal plants against clinical and phytopathogenic bacteria. African Journal of Biotechnology, 8 (23): 6677-6682,

[19] S. Esath Natheer, C. Sekar1, P. Amutharaj, M. Syed Abdul Rahman, and K. Feroz Khan. (20 K. Evaluation of antibacterial activity of Morinda citrifolia, Vitex trifolia and Chromolaena odorata African Journal of Pharmacy and Pharmacology, 6(11): 783-788