

Research of Biologically Natural Products from *Emmenanthe penduliflora* “Whispering Bells”

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Abstract

The goal of our project is to investigate and learn about potential bioactive chemicals in California Native Plants. This study involves the plant *Emmenanthe penduliflora* also known as “Whispering Bells”, an interesting native species whose seeds only germinates after being exposed to a wildfire. In this study, we describe our work to test for toxicity and antimicrobial that the plant potentially possess and to isolate potential active bioproducts



Emmenanthe penduliflora “Whispering Bells” (ref. 1)

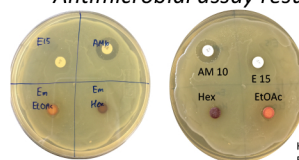
E. penduliflora BSTA and antimicrobial results

• BSTA result

Sample Fractions	ID #	*10 ppm (avg)	*100 ppm (avg)	SD	Avg % Death (10 ppm)	Avg % Death (100 ppm)
Crude Sample	CNP -	3.96	7.36	± 0.95	40.17	80.72
Hexane Fraction	CNP -	2.89	6.36	± 0.93	30.14	60.39
Ethyl Acetate Fraction	CNP -	0.77	1.28	± 0.55	5.14	9.59
Aqueous Methanol Fraction	CNP -	Will be analyzed in the future.				

* Indicates how many shrimps are dead out of 8-12 shrimps inside of each well.

• Antimicrobial assay result

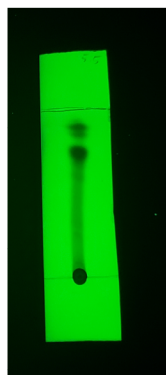
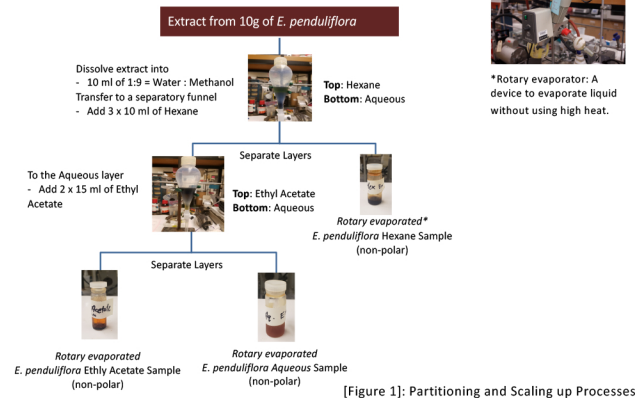


Sample Fraction	Zone of Inhibition (mm)
Hexane Fraction	-
Ethyl Acetate Fraction	8
Aqueous Methanol Fraction	Will be analyzed in future
Ampicillin (positive control)	15
100% Ethanol	-

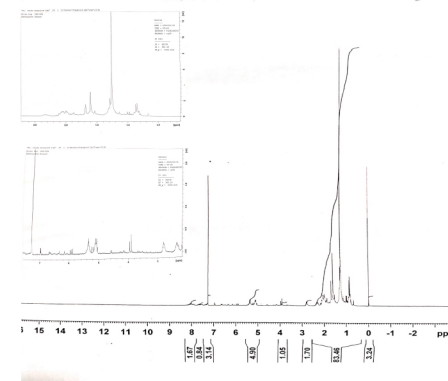
Hex = Hexane extract
EtOAc = Ethyl Acetate extract

Experimental Methods

Extraction and Partial Purification



²[Figure 2]: TLC Analysis ³[Figure 3]: NMR Analysis



² Thin Layer Chromatography (TLC); From *E. penduliflora* Hexane Fraction; UV visualisation (254nm).
³ 300 MHz Nuclear Magnetic Resonance (NMR)

Antimicrobial Assay

Antimicrobial assay was performed using disc diffusion method. 6mg of sample was dissolved in 20µl of 100% ethanol and transferred onto sterile 6mm filter disc. The ethanol was removed under vacuum.

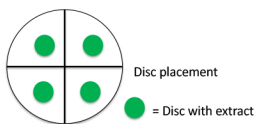
Petri dishes with nutrient agar was prepared and 100µl of *Escherichia coli* broth was plated onto the prepared media.



Prepared Nutrient agar media

Finally discs were placed onto the surface of agar. The plates were inverted and incubated at 37°C overnight.

Results are read by measuring the diameter of zone of inhibition.



Positive Control – Ampicillin 30mg (AM10)
Negative Control – 100% ethanol 100 µl (E15)

Conclusion

We have found that hexane and ethyl acetate extracts of *E. penduliflora* contains one or more compounds which are active against BSTA and antimicrobial test respectively. Future studies will involve purification and structural analysis of the active chemical compounds. As far as can be determined, *E. penduliflora* has not previously been investigated for presence of bioactive compounds.

Acknowledgements & References

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