

# Investigation of Presence of Bioactive Natural Products from *Lupinus Sericatus* and *Aesculus Sapindaceae*

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## Abstract

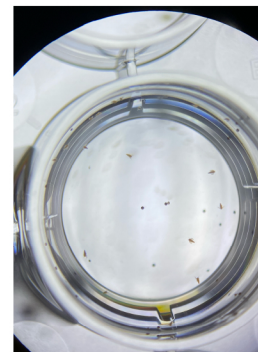
The goal of the Okuda lab is to investigate whether bioactive natural products are found in plants that are native to the California ecosystem. Two of those plants, *L. Sericatus* (left) and *A. Sapindaceae* (right), were investigated.



Although neither of the plants investigated were active against brine shrimp, we will continue to work up these samples via an antimicrobial assay.

## Brine Shrimp Toxicity Assay

*Artemia sp.* ("brine shrimp") are utilized as an indicator of biological activity. In a typical assay, 8-10 *Artemia* are placed in a well with 2.0mL brine water with 15 uL of sample in DMSO to be tested. After 24 hours, the number of dead *Artemia* are counted. Controls are brine alone, DMSO, and chromic acid (positive control).



## Extraction

1. Breakdown of plant leaves into fine pieces (about 3 mm x 3mm)
2. Addition of sufficient methanol to cover all leaves
3. After 24 hours, decant solution
4. Repeat steps 1-3, end result: about 80-100 mL total dissolved plant material in methanol

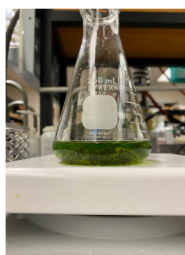


Image 3: Demonstration of plant leaves in methanol

## Brine Shrimp Assay Results

[Table 1] Brine Shrimp Toxicity Data Analysis

Genus/Species	ID #	*10 ppm (avg)	*100 ppm (avg)	SD	Avg % Death (10 ppm)	Avg % Death (100 ppm)
<i>L. Sericatus</i>	CNP - 103A	0	1.67	± 1.21	0	20.83
<i>A. Sapindaceae</i>	CNP - 106A	0	0	0	0	0
Control - DMSO	-	-	0	± 0	-	0.00
Control - Chromic Acid	-	-	8	± 0	-	100.00

## Evaporation/Preparation of Crude Sample



Image 4: Rotary Evaporator, used to remove methanol from the sample



Image 6: Round bottom flask with methanol fully evaporated and solid plant extract



Image 5: Spinning round bottom flask; evaporation in progress

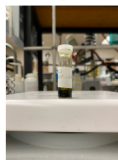


Image 7: Methanol added to round bottom flask; transferred to 1 mL vial.

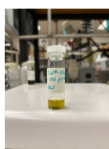


Image 8: Diluted 100 ppm sample.

## Conclusion

Both *L. Sericatus* and *A. Sapindaceae* were found to be inactive against brine shrimp. Further workup includes an antimicrobial assay (*Okuda lab*) and structure analysis if bioactivity is identified.

## Acknowledgements & References

- Los Gatos California Native Plant Society (CNPS)
- SJSU Undergraduate Research Program

## Image Credits

- Image of *L. Sericatus*: CalFlora Nursery
- William Tran, Okuda lab