

Biologically Active Natural Products from *Grindelia camporum*

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Abstract

Many drugs on the market today are the result of research regarding compounds naturally occurring in plants. While various genera of plants have already been observed regarding their natural products, many California native plants have yet to be studied. *Grindelia camporum* ("gumweed") is a California native plant which has exhibited promising activity in our Brine Shrimp Toxicity Assay (BSTA). As a result, *G. camporum* has been subjected to further investigation regarding its antimicrobial properties as well as the chemical responsible for this activity.

Project Findings

- *G. camporum* shows promising activity under the BSTA in 100 ppm concentrations in the extracted hexane fraction (Table 1)
- There was no apparent zone of inhibition for the antimicrobial assay.
- Thin Layer Chromatography (TLC) shows several potential bands responsible for BSTA activity (Fig 1).
- ¹H NMR exhibits peaks which are not typical of plant extracts, and may indicate unusual compounds (Figure 2)

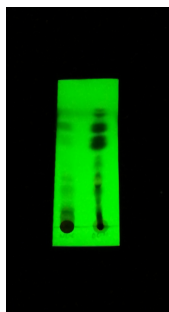


Figure 1. TLC Analysis

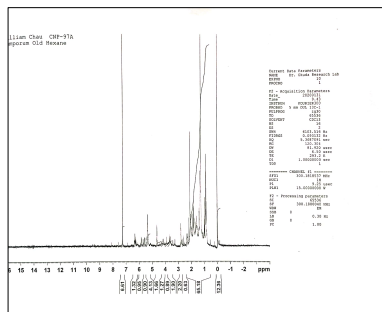


Figure 2. NMR Analysis

Figure 1. TLC of crude extraction (left) and BSTA active hexane partition (right) of *G. camporum* in 80% Hexane : 20% Ethyl Acetate solvent

Figure 2. NMR of BSTA active hexane partition of *G. camporum*

Table 1. Brine Shrimp Toxicity Assay (BSTA) and Antimicrobial Results for *Grindelia camporum*

Sample Type	ID #	BSTA 10 ppm Average Death	BSTA 100 ppm Average Death	Zone of Inhibition (cm)
Crude Sample	CNP-97A	1	9	No Test
Hexane Fraction	CNP-97A	7	10	0 cm
Ethyl Acetate Fraction	CNP-97A	0	0	No Test

Procedure

G. camporum is under cultivation in SJSU's Greenhouse on the 7th floor of Duncan Hall. Aerial portions of the plant are picked and dissolved in methanol to yield a crude extract. This crude extract was then



Figure 3. *G. camporum* flowering in the SJSU Greenhouse

tested in the BSTA and subjected to further purification through partitioning yielding Hexane, Ethyl Acetate, and Aqueous Methanol fractions. These partitions were tested in our BSTA and newly established antimicrobial assay. The active hexane partition was then subjected to NMR analysis.

Conclusion and Future Work

G. camporum has proven to be active in the Brine Shrimp Toxicity Assay (BSTA) which is an indicator for potential bioactive compounds. *G. camporum* did not show activity in the antimicrobial assay when using the BSTA active hexane fraction. Further work would involve the testing of these fractions as well as further purification and structural determination of the compounds found in *G. camporum*.

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