

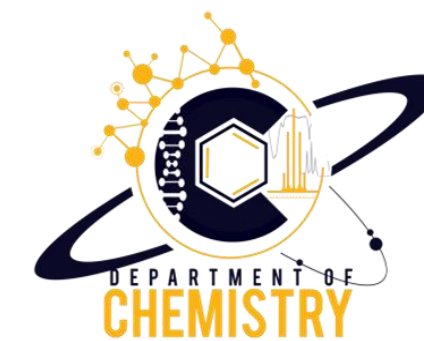
Total Phenolic and Flavonoid Contents, Antioxidant and Anti-Inflammatory Activities of Different Solvent Fractions from the Ethanolic Extract of *Allium ampeloprasum* (“Sibujing”)

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INTRODUCTION & AIM

The spice *Allium ampeloprasum* (“sibujing”) is popular as a condiment in Mindanao, Philippines, and is traditionally used to treat inflammatory diseases, fever, cough, and other ailments. Its medicinal properties may be linked to its antioxidant content, particularly phenolic and flavonoid compounds, which help mitigate oxidative stress and reduce inflammation.

Allium ampeloprasum

Bioactive compounds:
Phenolics and Flavonoids

Free Radical Scavenging

Reduction in
Oxidative Stress

Modulation of
Inflammatory Responses

Lowered Risk of
Chronic Diseases

This study aimed to provide comprehensive data on the antioxidant and anti-inflammatory activities of *A. ampeloprasum* crude extract and its fractions, ultimately highlighting its potential health benefits.

METHOD

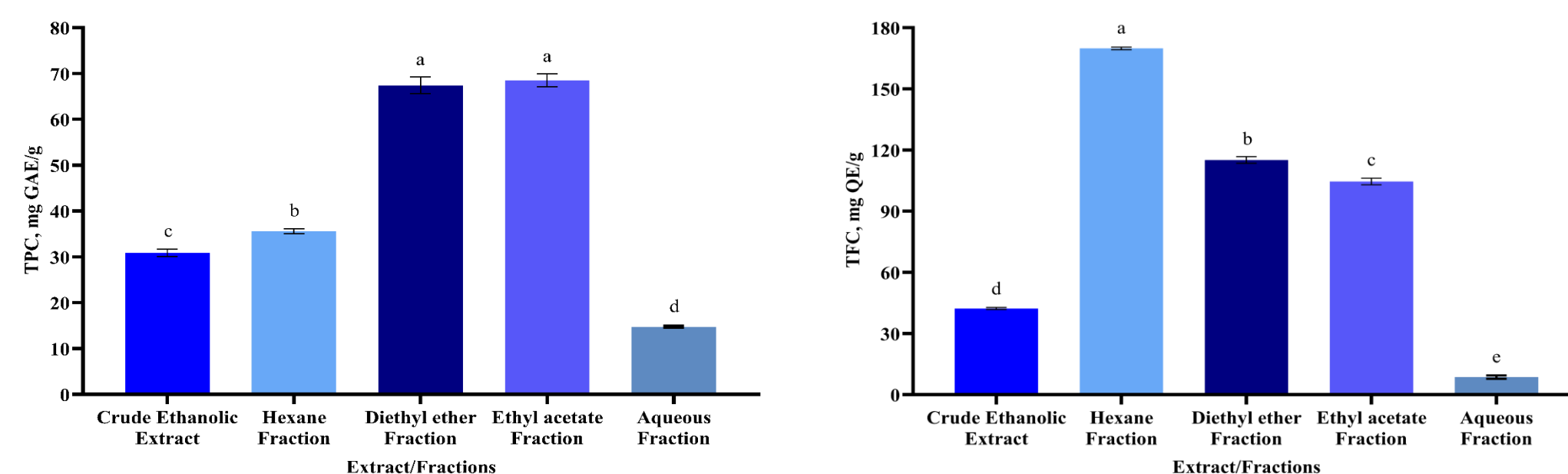
The plant material was washed, dried, and powdered. Crude extraction was done using ethanol, followed by sequential fractionation with solvents like hexane, diethyl ether, ethyl acetate, and water. Total phenolic and total flavonoid contents were measured using Folin-Ciocalteu and aluminum chloride colorimetric methods, respectively. Antioxidant and anti-inflammatory activities were evaluated using DPPH radical scavenging and egg albumin denaturation assays, respectively. Data analysis was performed using GraphPad Prism and Microsoft Excel.



A. ampeloprasum plant

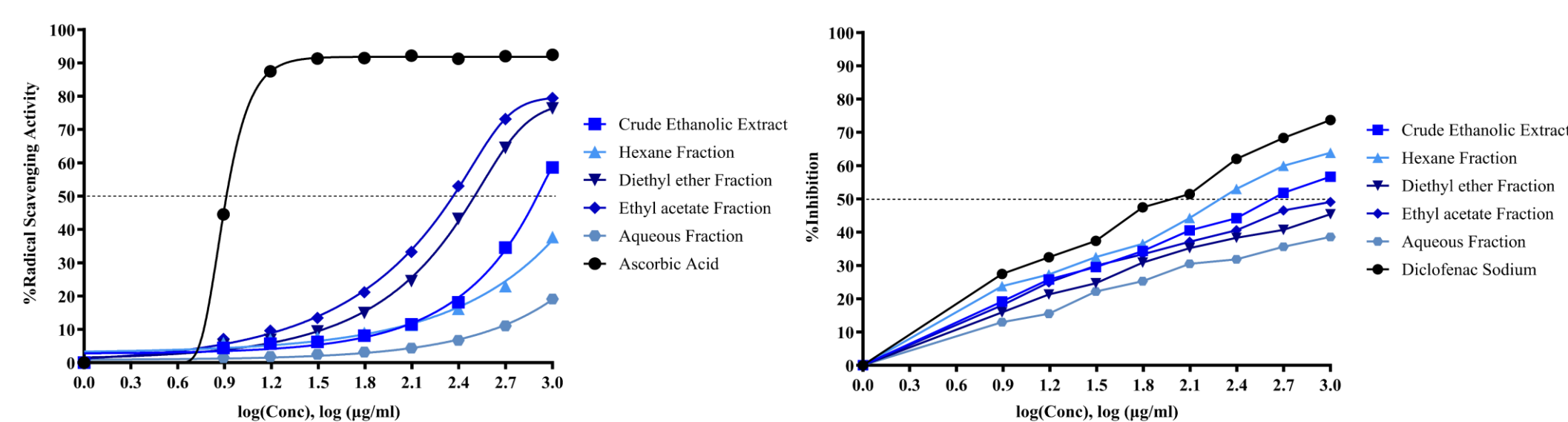


RESULTS & DISCUSSION



Extract/Fractions	TPC, mg GAE/g	Classification (TPC)	TFC, mg QE/g	Classification (TFC)
Crude Ethanolic Extract	30.87 ^c ± 0.81*	Medium	42.29 ^d ± 0.50*	High
Hexane Fraction	35.61 ^b ± 0.54*	Medium	169.88 ^a ± 0.64*	High
Diethyl ether Fraction	67.41 ^a ± 1.83*	High	115.11 ^b ± 1.62*	High
Ethyl acetate Fraction	68.54 ^a ± 1.44*	High	104.55 ^c ± 1.61*	High
Aqueous Fraction	14.73 ^d ± 0.24*	Medium	8.58 ^e ± 0.81*	Medium

Note: GAE = gallic acid equivalent. QE = quercetin equivalent. Values are means ± SD obtained from 3 replicates. Different superscript letters show statistical differences (p < 0.05). *TPC or *TFC per gram of crude ethanolic extract. TPC is classified as low (<10 mg GAE/g), medium (10–50 mg GAE/g), and high (>50 mg GAE/g), while TFC is low (<5 mg QE/g), medium (5–25 mg QE/g), and high (>25 mg QE/g).



Extract/Fractions	Antioxidant EC ₅₀ (µg/mL)	Anti-inflammatory IC ₅₀ (µg/mL)
Crude Ethanolic Extract	814.70 ^a ± 8.76	421.79 ^a ± 31.68
Hexane Fraction	>1000 ^d	205.83 ^b ± 6.73
Diethyl ether Fraction	316.41 ^b ± 6.53	>1000 ^c
Ethyl acetate Fraction	221.40 ^c ± 2.97	>1000 ^c
Aqueous Fraction	>1000 ^d	>1000 ^c

Note: Values are means ± SD obtained from 3 replicates. Different superscript letters show statistical differences (p < 0.05).

CONCLUSION

- **Traditional Use:** This study supports the traditional use of *A. ampeloprasum* (“sibujing”) in treating inflammatory diseases and highlights its potential as a natural antioxidant source.
- **Active Fractions:**
 - Ethyl acetate fraction: Exhibited significant antioxidant activity.
 - Hexane fraction: Showed notable anti-inflammatory activity.
- **Correlations:**
 - Higher TPC strongly correlates to better antioxidant activity.
 - Higher TPC/TFC moderately correlates to better anti-inflammatory activity.
- **Role of Compounds:** Phenolic and flavonoid compounds may significantly play a major role in *A. ampeloprasum*'s antioxidant and anti-inflammatory properties.

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