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Introduction

- ❖ *Euphorbia monteiroi* (Oshilalanamawadi, **Fig. 1**) has documented traditional uses, including the treatment of mental illness¹. This ethnobotanical knowledge underscores the plant's potential for pharmacological discovery.
- ❖ Plants of the genus *Euphorbia*, are sources of bioactive compounds, which possess a range of therapeutic properties, including antimicrobial, anticancer, and HIV latency-reversing activities².
- ❖ The global health landscape is increasingly challenged by antimicrobial resistance and the persistent burden of HIV/AIDS. The urgent need for new therapeutic agents is clear, with a growing number of bacteria developing resistance to existing drugs³ and HIV's ability to establish latent reservoirs, hindering a definitive cure^{4,5}.
- ❖ Although *E. monteiroi* have been documented¹, there is a lack of scientific research on the plant's phytochemical composition and its specific pharmacological activities.

Methodology

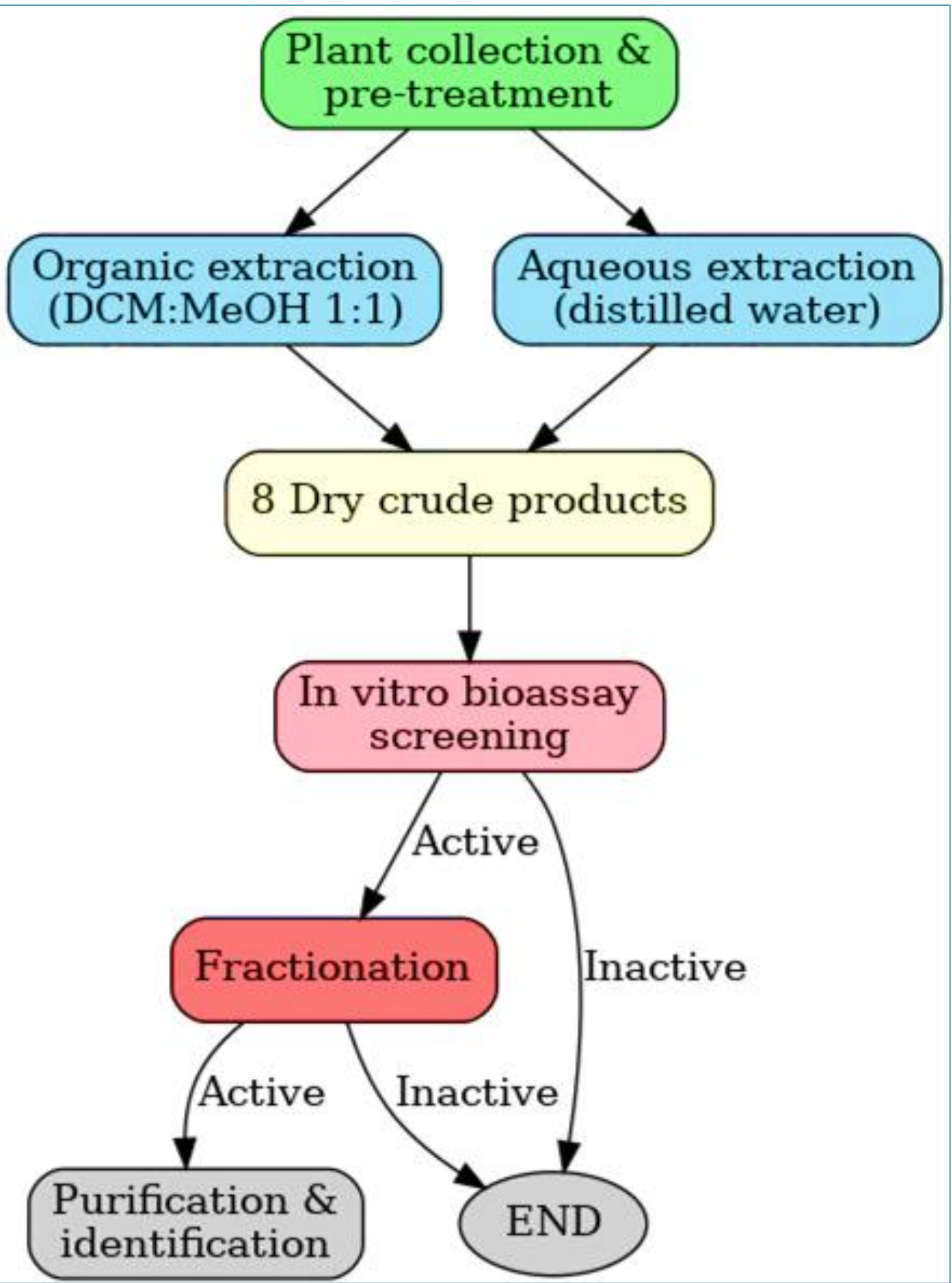


Figure 2: Bioactivity-guided isolation

Results

Figure 1: *Euphorbia monteiroi*



Figure 3: TLCs of crudes: A: DCM:MeOH:EtOAc (3:1.5:1); B: DCM:MeOH (2:0.5)

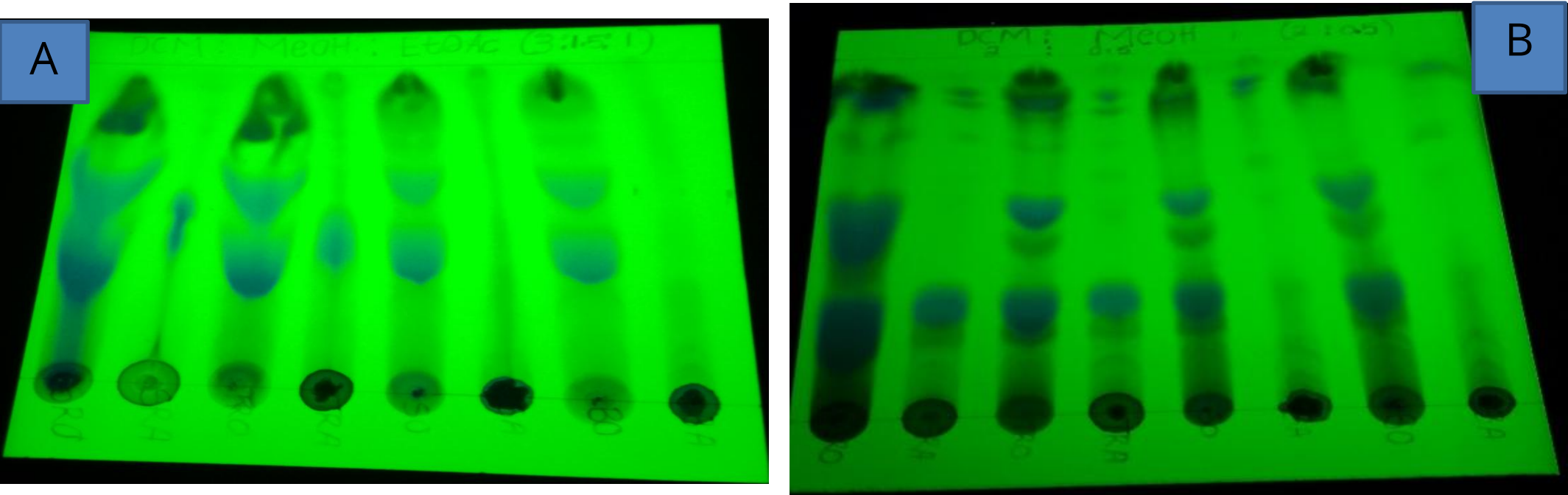


Figure 5: The % DPPH inhibition of different crude extracts of *E. monteiroi*

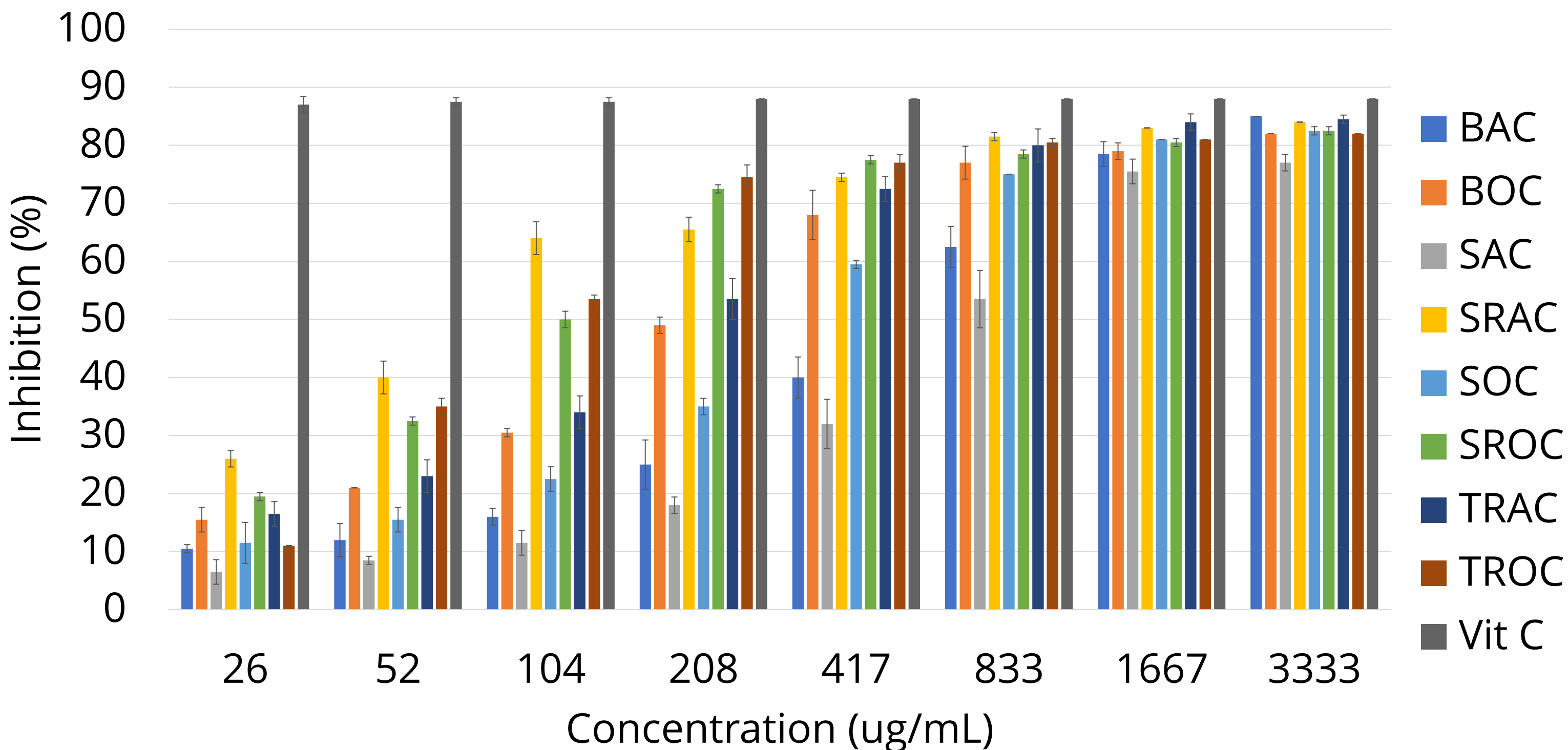


Table 1: Samples crude yield and percentage yield

Plant Part	Solvent	Crude Yield (g)	Isolation Yield (%)	Appearance
Sub-roots (SROC)	DCM:MeOH	34.7	13.88	Honey Orange
Tap roots (TROC)		25.6	10.24	Honey Orange
Stem (SOC)		37.6	9.25	Olive Green
Branches (BOC)		25.6	9.14	Olive Green
Sub-roots (SRAC)	dil. H ₂ O	9.5	19.00	Cedar Brown
Tap roots (TRAC)		23.1	9.63	Cedar Brown
Stem (SAC)		50.5	12.63	Cedar Brown
Branches (BAC)		45.4	16.21	Cedar Brown

Figure 4: Anti-HIV activity of crude extracts of *E. monteiroi*

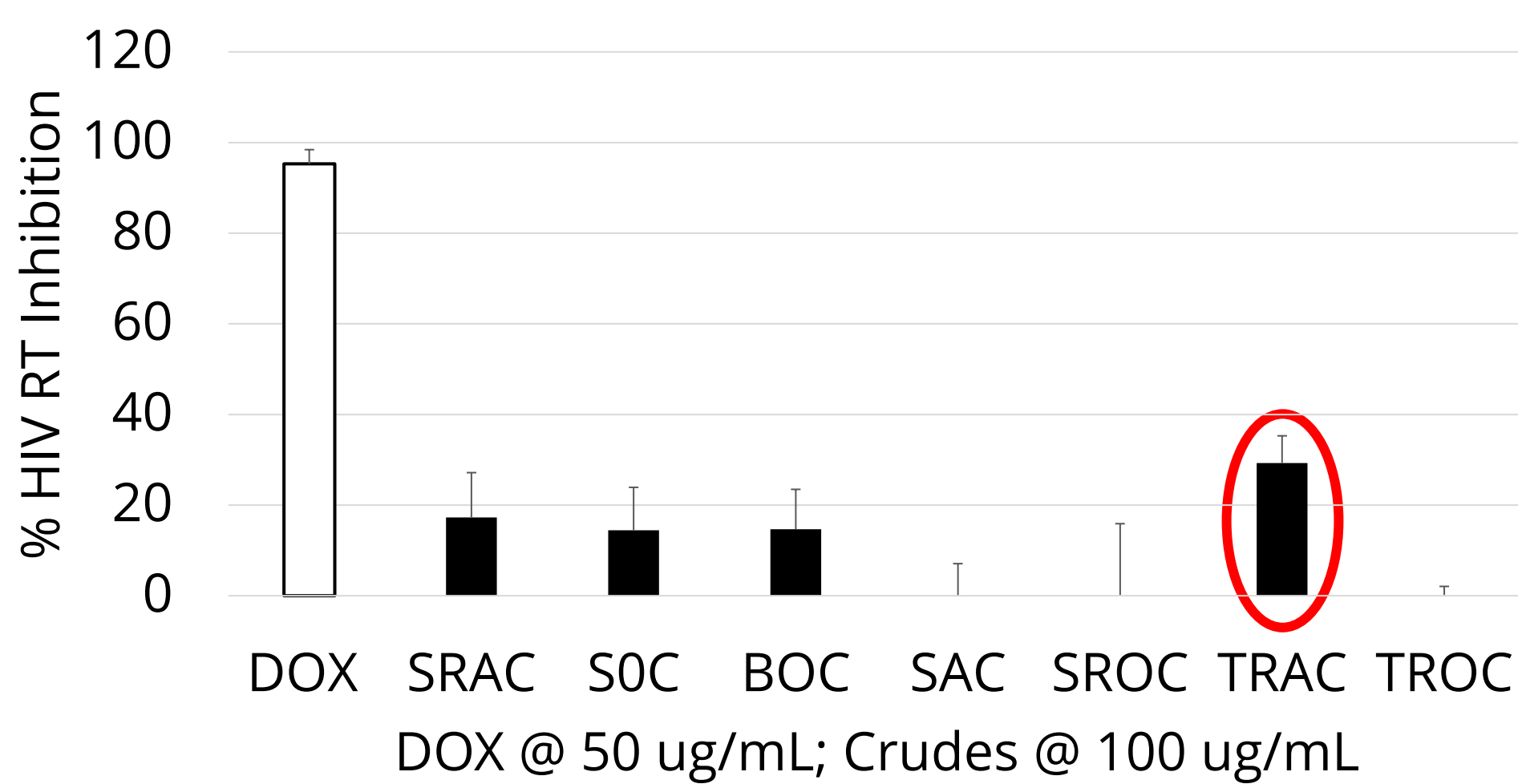
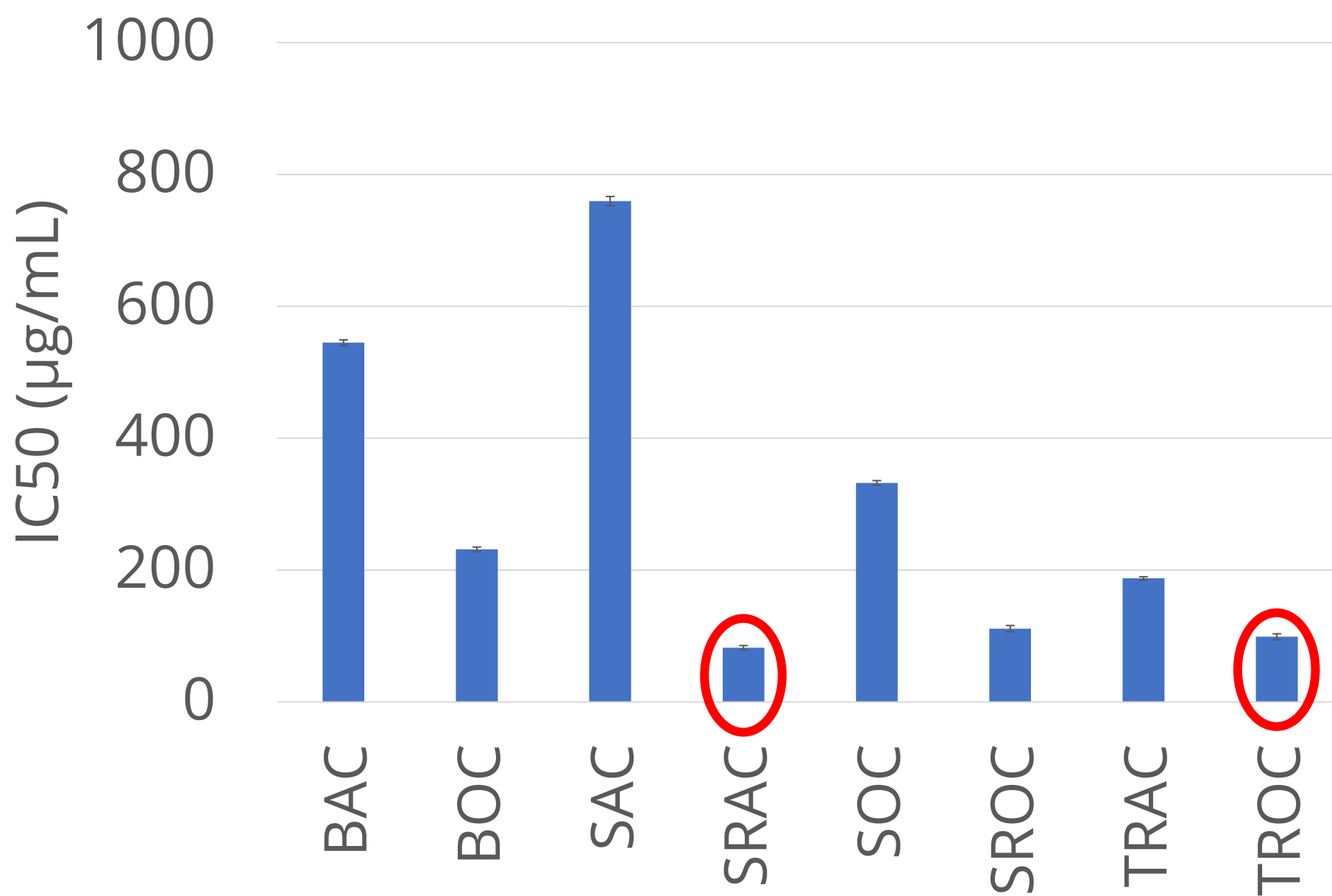


Figure 6: IC₅₀ values of different crudes for free radical scavenging activity by DPPH method (Vit C < 26µg/mL)



Conclusion

- ❖ **TRAC** extract is the most effective among the tested samples, showing roughly 29% inhibition against HIV RT-enzyme (**Fig. 4**).
- ❖ **SRAC**, **SOC**, and **BOC** extracts all showed moderate activity, with HIV RT-inhibition levels around 15-18%.
- ❖ All extracts demonstrate dose-dependent free radical scavenging activity (**Fig. 5**).
- ❖ **SRAC** and **TROC** extracts were the most potent antioxidants, with the lowest IC₅₀ values of **82.4 µg/mL** and **98.92 µg/mL**, respectively (**Fig. 6**).
- ❖ Notably, the chemical compounds responsible for antioxidant activity are different from those inhibiting HIV-1 RT as **TROC**, a potent antioxidant, showed almost no activity against HIV-1 RT.

Connecting the Dots

Our next step is to build a more comprehensive biological profile for these extracts:

1. Total Phenolic and Total Flavonoid Content.
2. Cytotoxicity: It will tell us if the HIV RT inhibition by TRAC is a specific effect or just general toxicity, ensuring the extract is safe for further study.
3. Expand Antioxidant Assays: to help determine the mechanism of action.
4. Antimicrobial.
5. Antibiofilm Activity.
6. Bioassay-Guided Fractionation: Subject **SRAC** and **TROC** crude extracts to chromatographic separation to isolate the chemical components.
7. Compound Identification using spectroscopic techniques.

Ethical Considerations (Permits obtained)

- ❖ UNAM Ethical Clearance Certificate
- ❖ National Commission on Research, Science and Technology Permit
- ❖ Material Transfer Agreement

References

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2. das Neves, G. P. *et al.* HIV latency-reversing activity of latex from *Euphorbia umbellata* (Pax) Bruyns and three diterpenes isolated from this species. *Nat. Prod. Res.* 0, 1–8 (2024).
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