

Antimalarial Potential of *Salacia debilis*: Isolation and Preliminary Characterization of Bioactive Stem Bark Constituents

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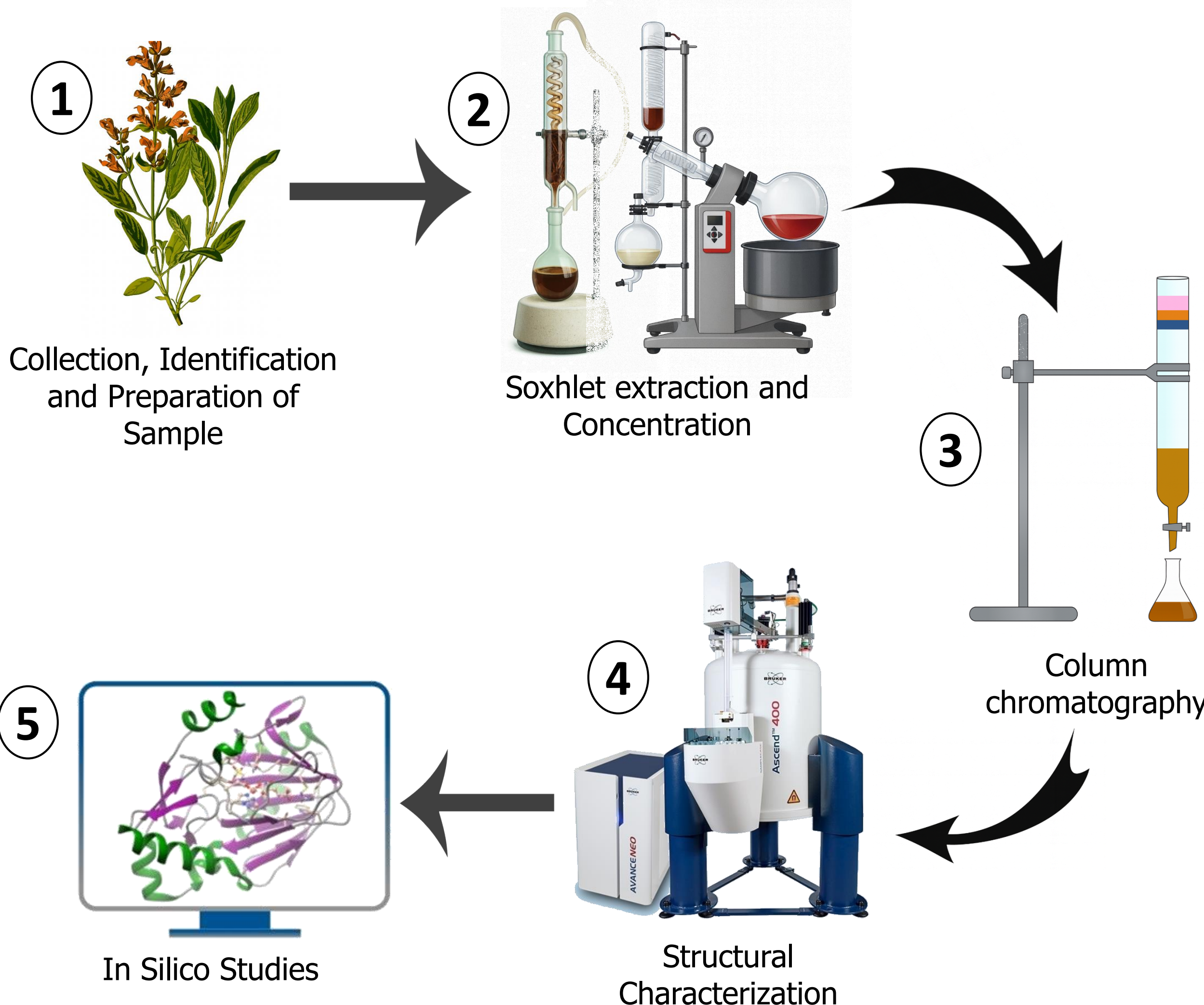
1. INTRODUCTION

- Salacia debilis* is a local West African medicinal plant, long recognized in folklore medicine for its role in managing malaria¹, one of the world's most menacing diseases².
- Earlier studies¹ have proven antiplasmodial activity for the ethanolic extract of *S. debilis*.
- However, only a limited number of isolated compounds from this plant have been evaluated for antimalarial activity¹.
- This study seeks to isolate and evaluate additional compounds from the ethanolic extract of *S. debilis* for their antiplasmodial properties.



Figure 1: Leaves and stem materials of *S. debilis*

2. METHOD



Scheme 1: Methodology

3. RESULTS

A. Extraction

Table 1: Extraction process

Aspect	Details
Initial Mass	3000 g (Air-dried, powdered)
Solvent Used	Ethanol
Extract concentration Process	Vacuum evaporation using rotary evaporator
Final Yield	240 g brown residue

B. Phytochemical Screening

Table 2: Phytochemical constituents of *S. debilis* ethanolic extract

Phytochemical Class	Results
Tannins	+
Saponins	+
Reducing Sugars	+
Alkaloids	+
Flavonoids	+
Coumarins	-
Triterpenoids	+
Phytosterols	-

(+) = detected; (-) = not detected

C. Isolation

The column chromatography of the extracted brown residue, followed by recrystallization of fractions with solids, a compound, U2, was isolated. U2 was identified as Friedelin

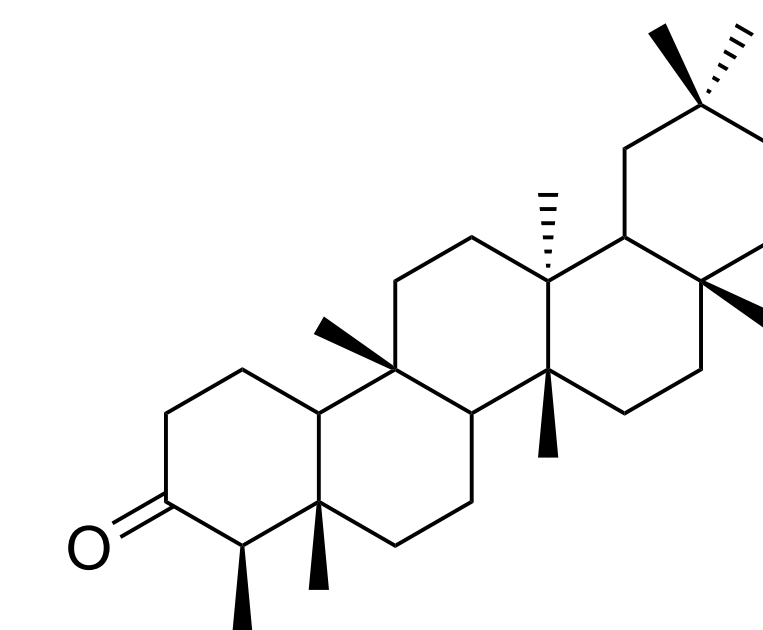


Figure 2: Structure of U2 (Friedelin)

D. In Silico Studies

Table 3: Molecular docking result of Friedelin and Artesunate with Antimalarial Drug target PfLDH

Ligands	Binding energies (kcal/mol)	Hydrogen bond interactions	Hydrophobic interactions
Friedelin	-9.8	Lys180	Phe208, Leu178, Val212, Val177, Lys291
Artesunate	-7.0	Thr97, Thr101, Phe100	Ile54, Phe100, Ala98

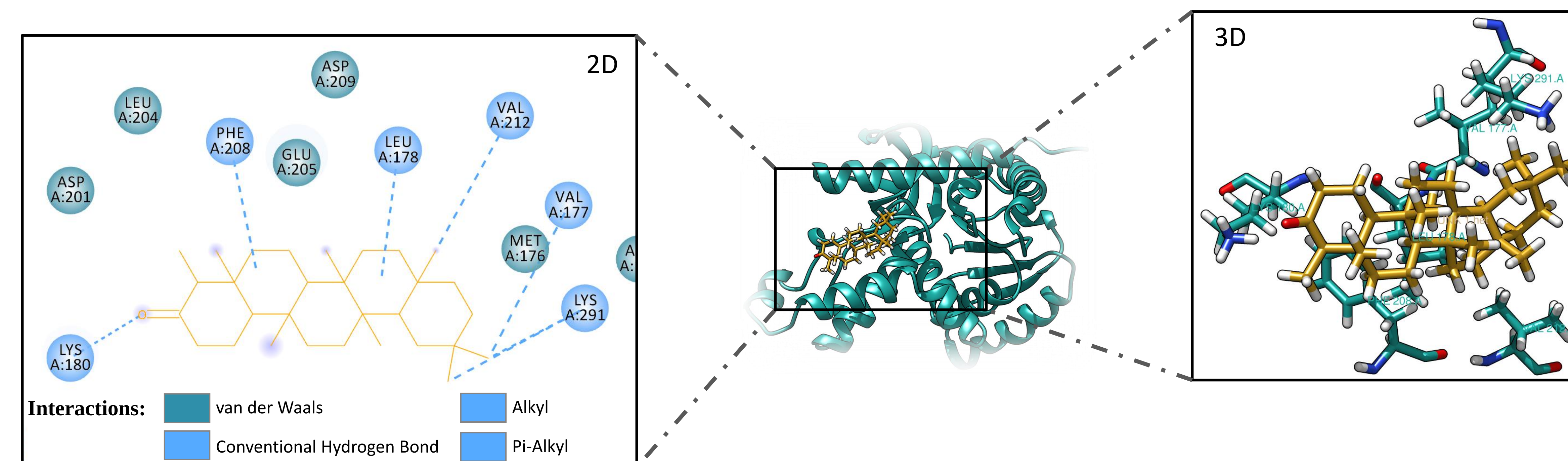


Figure 3: Molecular docking results diagram of Friedelin docked into pfLDH

4. DISCUSSION

Friedelin, a pentacyclic triterpenoid, is well known in the literature and associated with diverse biological activities, including antiplasmodial effects³. Previous studies have suggested its potential relevance in antimalarial assays, indicating that it may contribute to the bioactivity observed in medicinal plants traditionally used against malaria. In the present molecular docking study, Friedelin displayed a higher binding affinity (-9.8 kcal/mol) compared to Artesunate (-7.0 kcal/mol) (Table 3), suggesting stronger and potentially more stable interactions with pfLDH.

5. CONCLUSION

Friedelin was successfully isolated from *S. debilis*. The presence of this triterpenoid, previously reported for anti-inflammatory, antioxidant, and antimalarial relevance, provides scientific support for the ethnomedicinal use of *S. debilis* in malaria treatment. The findings of this study highlight the chemical and computational basis for the antimalarial potential of *S. debilis*, underscoring its relevance to the realization of SDG 3: Good Health and Well-being.

REFERENCES

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