

Are plants of the *Strychnos* genus still a potential source of new antiplasmodial metabolites after more than two centuries of study?

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Introduction

Malaria

- Is a parasitic disease transmitted by mosquitoes of *Anopheles* genus¹;
- Caused by 5 parasites of *Plasmodium* genus: *P. falciparum*, *P. ovale*, *P. vivax*, *P. knowlesi*, and *P. malariae*¹;
- is currently showing increasing resistance to marketed antimalarial treatments^{1,2};
- Remains a major public health problem^{1,2};
- Must be treated with innovative drugs, including newly identified natural antimalarial molecules.

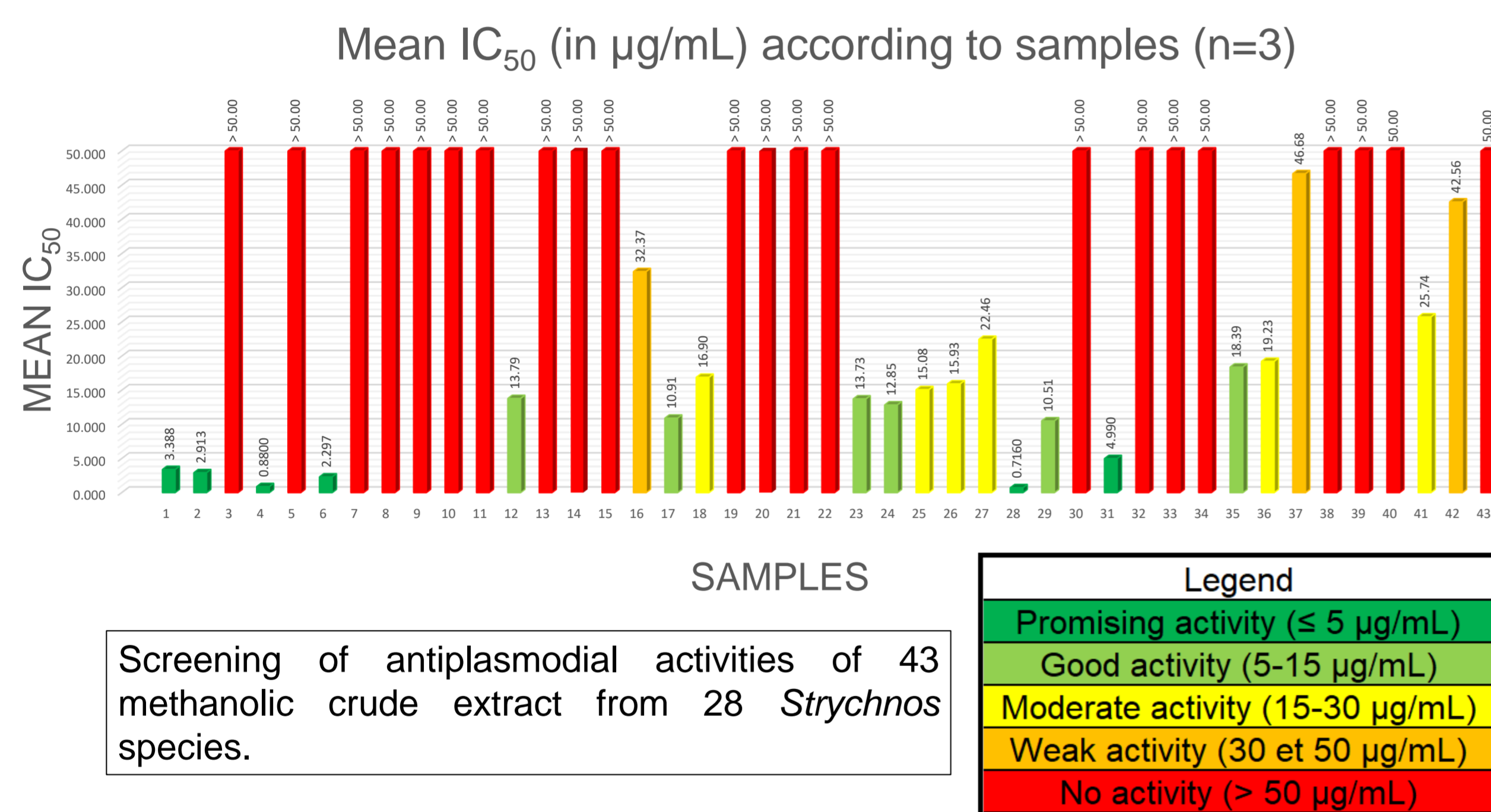
Strychnos genus

- Belongs to Loganiaceae family³;
- Includes about 200 species³;
- Presents a variety of traditional uses (snakebites, arthritis, asthma, diarrhea, fever, and many others)⁴;
- Studied for more than two centuries, especially for its curarizing and tetanizing properties, as well as for its antiplasmodial activities^{1,5,6};
- Allowed to identify promising antiplasmodial metabolites, such as strychnogucine B, isostrychnopentamine, sungucine, and many others^{5,6}.

Objectives

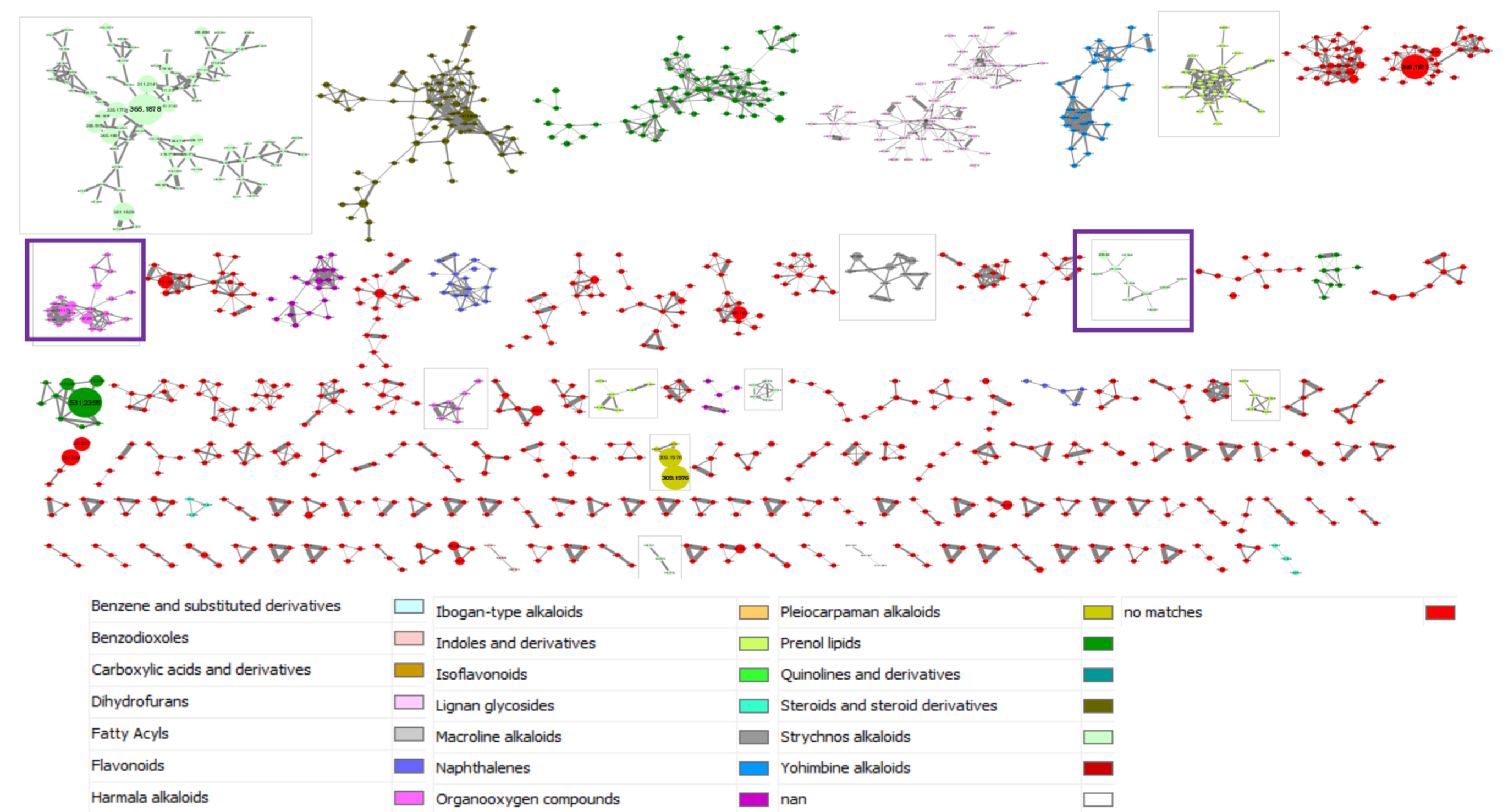
The objectives of this research project was to perform *in vitro* antiplasmodial assays for 43 methanolic crude extracts from 28 *Strychnos* species, and to unveil new alkaloids potentially active against malaria thanks to multi-informative molecular networks.

Methodology and results



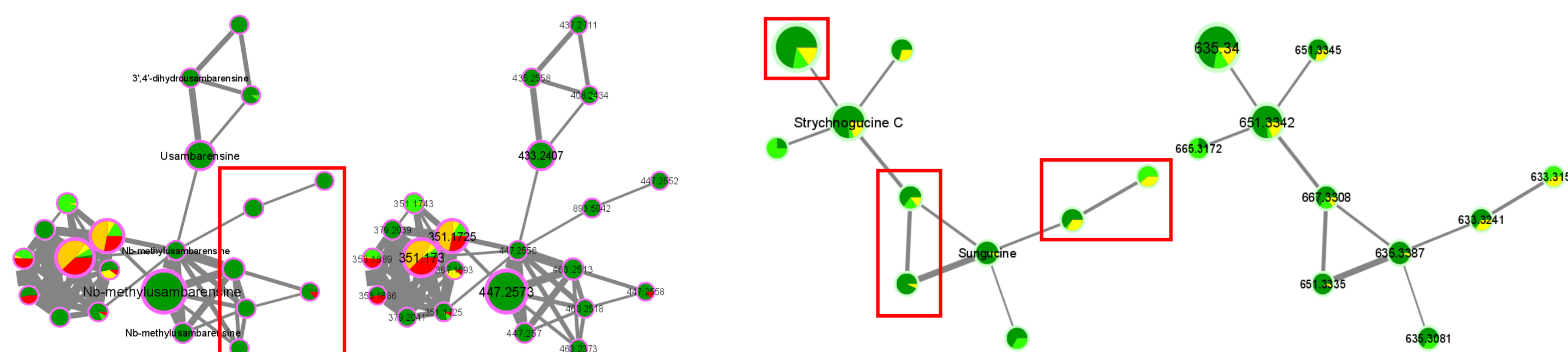
Data implementation

Zoom inside the 2 purple rectangles



MolNetEnhancer-based annotation of the molecular network of 43 methanolic crude extracts from 28 *Strychnos* species. The 2 purple rectangles highlight two interesting clusters.

Unknown metabolites potentially active against malaria



The two highlighted clusters (purple rectangles) with the suggested identifications in the left part, and the masses of metabolites in the right part.

Conclusion and prospects

- The molecular network based on MS/MS data from 43 methanolic crude extracts of 28 *Strychnos* species unveiled the presence of unknown metabolites potentially active against malaria;
- The use of the Dictionary of Natural Products did not allow us to identify them;
- For the future, it would be interesting to isolate these unknown metabolites using the bio- and mass-guided fractionation technique;
- Once isolated, they will be identified by NMR as well as MS and MS/MS, and tested against malaria to confirm the antiplasmodial activities. Moreover, the MS/MS data will be imported into the databases to identify them quickly in the future molecular networks

References

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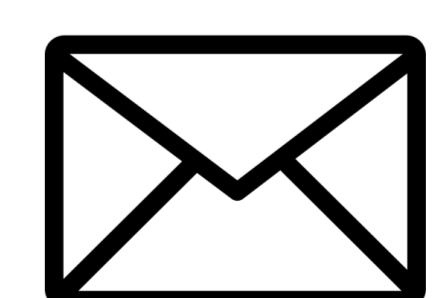


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