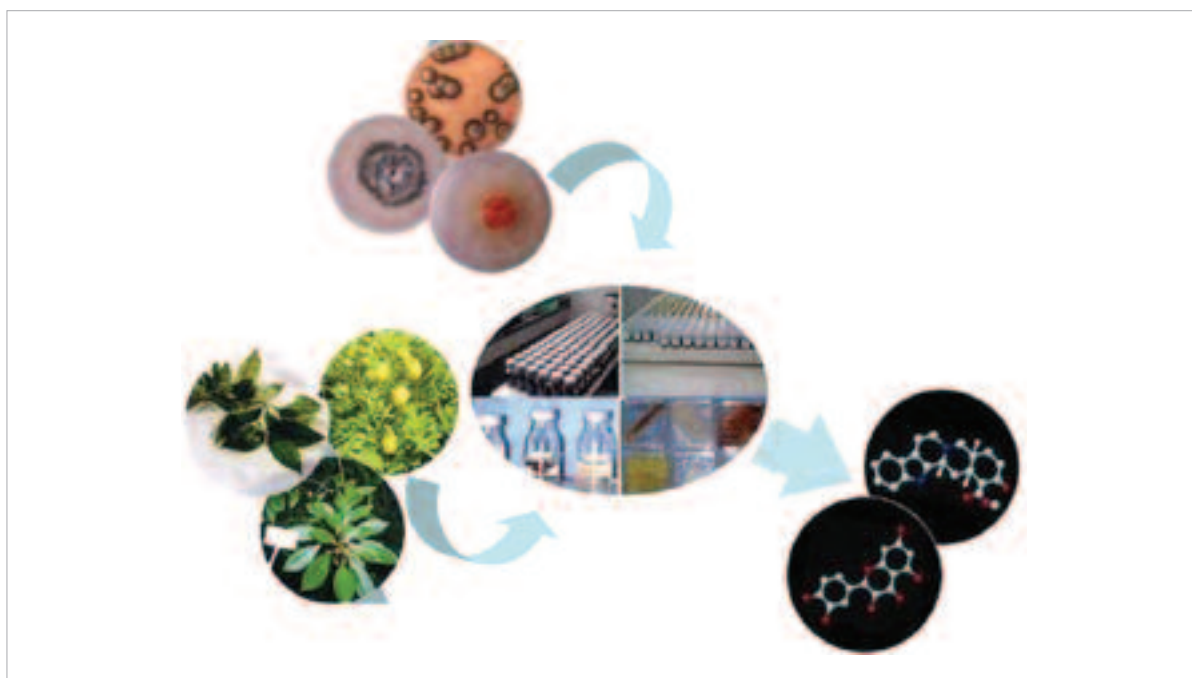


SEARCH FOR POTENTIAL ANTITUMORAL, ANTIOXIDANT, ANTIINFLAMMATORY, ANTIDIABETIC, ACETYLCHOLINESTERASE AND MIELOPEROXIDASE INHIBITORY NATURAL COMPOUNDS FROM CERRADO AND ATLANTIC FOREST

Dulce Helena Siqueira SILVA

Araraquara Chemistry Institute / Paulista State University (Unesp)



Plants and endophytic fungi-derived extracts and pure compounds

The changing strategies for preservation and sustain the diversity in Brazil in the past few years evidences the intrinsic value of this enormous biological resource of potentially new bioactive compounds, and represents one of the greatest challenges nowadays facing the accelerated process of devastation of several Brazilian biomes. The systematic bioactivity evaluation of crude extracts and pure compounds from São Paulo state biota associated with additional information on chromatographic profile, spectrometric data and/or biological activity shall result in value-added material, which will be available for further studies. The might converge to hits or lead compounds to pharmaceutical, agroceutical, nutraceutical, cosmetics industry, which is expected to bring great contribution for conservation and sustainable economic development from the biodiversity of São Paulo state.

SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

As part of our initial objectives, partial insertion of data from collections of plant material and preparation of plant extracts has been performed, using the BIOprospectA databank (<https://bioprosecta.iq.unesp.br/scyllaProspecta/>).

Our bank of plant extracts, currently at Botanic Institute – IBT-SMA, Sao Paulo, has ca. 1,800 extracts from Sao Paulo State main biomes: Cerrado and Atlantic Rainforest. Expansion of this bank has not been significant over the past three years due to CGEN (MMA – Ministry of Environment) restrictions regarding collection and access to biological material. In addition, a collection of endophytic fungi extracts has been organized at NuBBE (Chemistry Institute-UNESP-Araraquara) which has been proven a rich and attractive source of bioactive natural products.

Samples from the bank of extracts have been assayed for antifungal, antioxidant, antimalarial and antitumoral activity, in addition to inhibitors of inflammation-related enzymes myeloperoxidase and cyclooxygenase, and acetylcholinesterase, which is involved in CNS related diseases. This preliminary screening indicated ca. 6% of tested samples presented bioactivity.

Modern phytochemical methodologies, including hyphenated chromatographic/spectroscopic techniques; and for bioactivity evaluation, using fast, sensitive and reproducible preliminary bioassays have been combined for conducting systematic studies, which resulted in the isolation of several bioactive compounds from selected plant species. Such screening allowed the selection of promising crude extracts, which have been chemically investigated in depth and afforded ca. 250 pure compounds. The obtained natural metabolites had their biological/pharmacological properties evaluated, which resulted in antitumor clerodane diterpenes from *Casearia sylvestris*, cytotoxic piperidine alkaloids from *Cassia leptophylla*, antioxidant glucosylxanthones from *Arrabidaea samydoides*, antifungal alkyl and benzyl sulphides from *Petiveria alliaceae*, antifungal, antibiotic and cytotoxic nor-lignans from *Styrax ferrugineus* and *S. camporum* (Styracaceae), antibiotic phenetyl fatty acid esters from *Stemodia foliosa*, cytotoxic guanidine alkaloids from *Pterogyne nitens* (Fabaceae) and *Alchornea glandulosa* (Euphorbiaceae), antioxidant flavonoids from *Nectandra grandiflora* and *Chiococca braquiata*, among others.

Such results have attracted the attention of pharmaceutical and cosmetic companies, to carry out co-funded research (FAPESP, FINEP) in our labs aiming the development of products containing value-added material from the Brazilian plant biodiversity.

MAIN PUBLICATIONS

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Dulce Helena Siqueira SILVA

Instituto de Química de Araraquara
Universidade Estadual Paulista (Unesp)
Rua Professor Francisco Degni s/n
Caixa Postal 355 – Quitandinha
CEP 14800-900 – Araraquara, SP – Brasil
.55+16-3301-6659
dhsilva@iq.unesp.br