

## ATLANTIC FOREST AROMATIC IN SÃO PAULO STATE: CHEMICAL COMPOSITION OF VOLATILE OILS AND BIOLOGICAL ACTIVITY ANALYSIS

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The aims of this proposal will contribute with the knowledge of the chemical constitution of volatile oils found in native species of the Atlantic Rain Forest as well as verifying the putative pharmacological activity of these oils (antibacterial, antifungal, anti-inflammatory and antitumour activities). The species whose oils presented constituents interesting for the aroma, or pharmaceutical industries, will be selected for posterior studies of *in vivo* and *in vitro* propagation aiming at the sustainable use and the maintenance of germoplasm. The main goal of this proposal is to contribute for the sustainability of the biome, pointing its economic potential in accordance with the current demands. The search for a sustainable development has influenced either the process of selection of potential species or the methods of production of raw material. The employment of natural products in the cosmetic industries or in Phytomedicine is limited by the scale of the collection and the sustainable use of the forest. In the great majority of the cases, the industry looks for new cultivars that will guarantee the raw materials high production. In this way, the development of the biotechnology, particularly genetic engineering, facilitates the culture of medicinal and aromatic plants far off its natural habitat, contributing to evolve from extractive to cultivated.



*Clevenger apparatus for essential oil extraction by steam distillation*

## SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

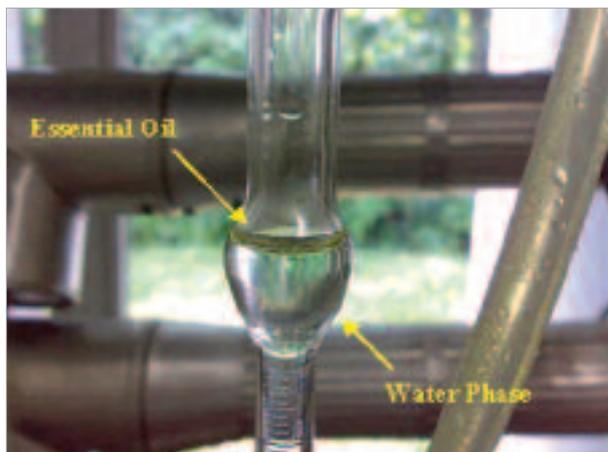
The Atlantic Rain Forest in São Paulo has a great diversity of essential oil-producing plant species. Lauraceae and Myrtaceae, both recognized producers of volatile oils, are also listed among the four most important families in the floristic composition of the São Paulo Atlantic Rain Forest. During the fieldwork, 111 specimens were collected in different conservation units, leading to 170 essential oil samples that were analyzed regarding their chemical composition and biological activity.

In the antimicrobial assay, all the oils tested presented a high growth inhibition for *Staphylococcus aureus*, probably in an unspecific way. Regarding the fungi, 22 samples presented one or more compounds with inhibitory activity against at least one of the tested strains. Accordingly with the results obtained so far, six samples presented promising results in the *in vitro* anti-inflammatory assay. In the cytotoxicity assay with tumor cells, 42 samples (71%) were lethal to at least one of the cancer cells strains.

Seasonality studies with Myrtaceae species suggested that variations observed in the essential oil yield and composition are associated with the changes from dry to wet season, mainly in the constituent proportions rather than the presence/absence of certain compounds.

Germination studies carried out with six species of *Eugenia* (Myrtaceae) demonstrated a remarked decrease in the germination percentage for all the species when the seeds were dried. Practically no germination was observed when water content reached values near 15%. A direct relationship between water potential and reduction of water content was observed. Seeds of three *Eugenia* species were cut through several methods and germination levels in all cases were higher than 100%, confirming their regeneration ability and the potential to increase the production of seedlings from a same seed lot.

Detail of the oil extraction in the Cleverenger apparatus



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