

Poster

Biological activity of rainforest plant extracts from Far North Queensland, Australia

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Introduction. Tropical rainforests provide a rich variety of plant species. The pharmacological wealth of these rainforests, as yet still largely unexplored, is a result of both the species richness of the tropical flora, and the diversity of pathogens, parasites, and herbivores against which the plants must defend themselves. The diversity of consumers has inevitably selected for a diversity of defensive mechanisms, many of them chemical. Many of these chemical defenses, because of their metabolic precision, can be used to solve human medical needs.

Objectives. To screen Australian rainforest plant extracts for cytotoxic activity against a panel of human tumor cell lines, for antimicrobial activity against Gram-positive and Gram-negative bacteria and opportunistic pathogens.

Methods. Plant materials were collected from various sites in the Atherton Tablelands and Cape York Peninsula, Queensland, Australia. Cytotoxic activity was determined using the MTS assay for cell viability [1]. Antimicrobial activity was determined using the microbroth dilution technique [1].

Results. A total of 137 species of trees and three lianas, distributed over 30 families, were collected and screened. Of the 140 species tested, 55 showed remarkable cytotoxic activity against at least one of the cell lines while six species [*Daphnandra repandula* (Monimiaceae), *Melicope rubra* (Rutaceae), *Cryptocarya hypospodia* (Lauraceae), *Carnarvonia araliifolia* (Proteaceae), *Pittosporum venulosum* (Pittosporaceae), and *Calophyllum costatum* (Clusiaceae)] showed pronounced activity against all tumor cell lines tested. Fifteen species showed antibacterial activity against *B. cereus*, seven of which [*Melicope rubra* (Rutaceae), *Xanthostemon whitei* (Myrtaceae), *Grevillea hilliana* (Proteaceae), *Horsfeldia australiana* (Myristicaceae), *Syncarpia hillii* (Myrtaceae), *Clausena brevistyla* (Rutaceae), and *Melicope jonesii* (Rutaceae)] were also active against *S. aureus*.

Conclusion. Given the promising biological activity observed in this present study along with Australia's unique biodiversity, the likelihood of discovering new medicinal agents from Australian tropical rainforests is significant, and the economic benefits may be considerable.

Keywords: cytotoxicity, antibacterial, antifungal, north Queensland, tropical rainforest

Selected References

[1] Setzer MC, Setzer WN, Jackes BR, Gentry GA, Moriarity DM. 2001. The medicinal value of tropical rainforest plants from Paluma, north Queensland, Australia. *Pharmaceutical Biology*, 39, 67-78.

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