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## Bioassays on Ethnobotanical Plants With Potential Activity Against *E. coli*, *Staphylococcus aureus*, *Candida albicans*, and Hela Cancer Cells

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During a three month period, ethnobotanical interviews were conducted to identify and collect plants traditionally used to treat skin and mouth infections. Plant parts (i.e. inner bark, young or mature leaves, fruit, etc.) specific to the native informants' knowledge were collected and preserved in 100% ethanol to maintain the chemical integrity in the field. Methanol and hexane extracts from these plants were tested against microbes in established laboratory bioassays.

The total number of plants showing significant activity in these tests was lower than expected. Each plant's actual potential to inhibit microorganisms may not accurately be represented by this research due to two uncontrollable factors. First, our samples were collected fresh in the field and then preserved in 100% ethanol. This preservation, which is necessary to comply with quarantine and immigration standards and also to prevent sample contamination, may alter the plant compounds.

Second, even if the ethanol did not disturb the plant compounds, the preparation techniques used by traditional healers are very different than the drug preparation techniques of the laboratory. The healers sometimes use varied solvents, physical manipulation, and combination of plants in order to prepare a traditional treatment. The synergistic interaction of two different plants together may be what produces the ameliorative effects in the field, but this phenomenon is very hard to replicate effectively in the laboratory. Further development into more traditional preparation methodology based bioassay protocol would greatly benefit the discovery of new drugs by better fusing ethnobotany fieldwork with pharmaceutical lab-work.

This anti-microbial study of ethnobotanically selected Tongan plants has presented various extracts with strong activity against several infectious microorganisms. Seven of the 36 plants showed significant inhibition against *Staphylococcus aureus*, *Candida albicans*, and/or *Escherichia coli*. The two most effective plants are previously documented to show biochemical activity and are important candidates for further research. Further testing and bioassays are currently underway to isolate the biologically active compounds in these plants. Indeed, these results support the traditional use of several of these plants and maintain the important role of traditional healers in the search for new medicines. Compensation will assuredly be given to the Tongan people if further research shows potential for drug development.

The details of this research are being compiled into an honor's thesis and a copy will be stored in the BYU Library. Also, a complete write up of this research is currently in the process of being submitted to the *Journal of Ethnopharmacology*.