

## Past Research

Dr. Scott Carroll, MD, has conducted clinical studies on the Fijian Red Mangrove in Atlanta, Georgia at one of the largest privately held Asthma and Allergy Institutes in the US. Here's what he has to say about this amazing plant:

"My name is Scott Carroll, M.D. and I am the senior partner of a large asthma and allergy clinic where I have been practicing for the past 30 years. I see many patients with upper and lower respiratory tract infections, most of which are caused by viruses and do not respond to antibiotics. Since antibiotics are overused by many physicians, I decided to evaluate the clinical application of a natural antiviral plant extract from the Fiji Islands. The scientific name is Rhizophora Mangle, and, to date, the clinical response has been very positive. Over 79% of the patients who received the extract at the onset of their infection had complete resolution of their symptoms within 2 days. And the common cold usually lasts 7- 10 days."

October, 2004

The Effect of Fijian Rhizophora Mangle (Red Mangrove) on The Common Cold  
Scott Carroll, M.D.

December 2005

### Office Contact:

6667 Vernon Woods Drive, N.E.

Suite A-30

The Atlanta Allergy and Asthma Clinic

Atlanta, Georgia 30328

404-252-4207

### Background

The Fijian society has used Rhizophora mangle for over 100 years as the primary traditional treatment for the common cold and related symptoms. The aerial rhizomes of Rhizophora Selala, Rhizophora Stylosa and Rhizophora Samoensis were recommended to the Nature's Nurse, Inc. research team by village herbalists and members of the Biology Department at University of the South Pacific as being the most effective remedy for rapid elimination of head and chest congestion, runny noses, and other typical symptoms of a common cold.

### Methods

A combination of research methods incorporating anthropological, ecological, behavioral and botanical field methods, along with laboratory analysis of the traditional herbal decoction of Rhizophora, were conducted over a five year period from 1998 - 2003. On the basis of this research, it was determined that a water-based decoction or a specific type glycerin-based fluidextract (100% alcohol-free) of a blend of the Fijian aerial rhizomes into a concentrated fluidextract are effective. In this study, clinical self-reports were obtained from 84 individuals using a standardized clinical report form and interview to collect protocol compliance and product efficacy data. The product tested is known as Fiji Titi /Fiji Tea.

### Results

79% of patients experienced substantial to complete relief of cold-related symptoms within 12- 48 hours of initiating the recommended usage protocol.

### Conclusions

The basic hypothesis of this observational study was: a water-based decoction or specific glycerin-based fluidextract (100% alcohol-free) of Fijian Rhizophora mangle delivered via a fluid extract concentrate would produce a rapid (12-48 hours), significant-to-complete reduction of cold-related symptoms in patients experiencing symptoms of the common cold. The hypothesis appears to have been supported. The results warrant further controlled, comprehensive clinical trials.

### INTRODUCTION

The purpose of this observational, clinical report study was to monitor the impact of Fijian Rhizophora mangle on the common cold and related conditions. A general literature review on the traditional medicinal uses of Rhizophora mangle worldwide yielded general insights into the possible medicinal effects of Rhizophora mangle. A member of the Nature's Nurse, Inc. research team, Amnon Levi, Ph.d. produced a summary of the available literature; a subset of which is included as Appendix A. However, the literature review yielded minimal insights into the uses and efficacy of Fijian Rhizophora. Thus, the primary data source was the reports of herbal traditionalists in Fiji who were familiar with the historic anti-microbial uses and impact on the common cold and related symptoms. Their reports were corroborated by the Chief Pharmacist in The Fijian Ministry of

Health. His letter indicating the recognized, safe use of Fijian Rhizophora is included as Appendix B. Additional safety evidence was obtained when product research and development revealed Rhizophora mangle to be recognized by the United States Department of Agriculture as an approved dietary supplement. Rhizophora mangle is listed in the directory, "U.S. Herbs of Commerce" as an approved dietary supplement. Additionally, our constituent analysis at Terradyne Labs of the raw rhizome supported the proposition that the plant is safe for human consumption.

The Fijian society has used the aerial rhizomes of Rhizophora mangle (Stylosa, Selala and Samonensis) in the form of a tea beverage for over one hundred years. The primary application has been for the treatment of the common cold and related respiratory symptoms. Independent reports by traditional herbalists on three Fijian islands invariably included strong, insistent statements that the decoction was very effective at treating head and chest congestion stemming from the common cold. As is typical with traditional medicines, efficacy for many other anti-microbial purposes was claimed. However, one key commonality across all herbalists was the application of the rhizome decoction for treatment of colds and related/similar symptoms. In order to achieve definitive outcomes, it was decided to promote and study the impact of Fijian Rhizophora solely on cold symptoms. Thus, the working hypothesis of our clinical self-report study was as follows:

A hot water decoction and/or specific glycerin-based fluidextract of Fijian Rhizophora mangle delivered via a fluidextract concentrate would produce a rapid (12-48 hours), significant, possibly complete, reduction of cold-related symptoms. (A previous study by Ted Anders, Ph.d. and reported to this researcher found the hypothesis to be supported with an observational sample of more than 60 clients ranging in age from 2-80.)

The pertinence of this clinical report study to the on-going assessment of traditional herbal medicinals around the world is significant in three ways. First, it is essential that all herbal medicinals, including Fijian Rhizophora mangle, receive scientific scrutiny to substantiate claims. Second, the knowledge base pertaining to Rhizophora mangle must be expanded and substantiated as there are historical reports and recent studies from around the globe indicating potential medicinal properties (Hernandez and Perez, 1978; Duke and Wain, 1981); including significant anti-viral properties (Premanathan, Arakaki, Izumi, et al., 1999). Third, in the case of Fijian Rhizophora, it appears the plants provide a unique, reliable, naturally occurring constituent combination which needs to be more thoroughly examined to identify the primary active constituent and other identified constituents as a broad spectrum, complimentary support to primary active constituent action. Such a contribution to the arsenal of health care supplements available to humanity would be useful and noteworthy.

## METHODS

### Selection and Description of Participants

During the 12-month time period from February, 2004 through February, 2005, Dr. Scott Carroll, M.D. conducted this initial clinical study focused on the "Fiji Titi /Fiji Tea " product created by Nature's Nurse, Inc. The patient sample included 84 patients between the ages of 3 and 74; male and female. These patients had 2 or more symptoms related to the common cold: nasal congestion; runny nose; sore throat; headache; cough (with or without chest congestion); and malaise.

## TECHNICAL INFORMATION

The recommended protocol for product use was: 2 full droppers of concentrated fluidextract to 1 cup of water, 4 times daily (morning, noon, evening and bedtime) for two days.

The fluidextract concentrates used were of two types. One was a hot water decoction produced by Terradyne Naturale, Inc. in their laboratories located in Woodbine, Iowa. The concentrate was designed to equal the potency of the traditional dosage created from 50g of dried, crushed rhizome in 8 cups of water. The extraction was obtained with a hot water decoction, which produced a dark brown, thick liquid; the UV spectrum of which was ?280nm, Abs. 0.2972. The yield was 29 ml/100g from crushed, dried Rhizophora. The final concentration was 3.4g/ml (d~1.2) or 2ml/cup of water. This fluidextract requires the inclusion of a preservative, sodium benzoate, in the finished product. The delivery system was a 1 oz. brown actinic bottle with a 1 ml capacity dropper.

The second was a proprietary glycerine-base alcohol-free fluidextract, called a '3-3-6&trade;' processed fluidextract, produced by Cedar Bear Naturales, Inc. at their central R&D/lab operations in Roosevelt, Utah. The 3-3-6&trade; process is a serialized technology designed to produce a finished fluid extract that equals or exceeds the efficacy of the traditional dosage created from 50g of dried, crushed rhizome in 8 cups of water. The 3-3-6&trade; fluid extraction results in a dark brown, high viscosity liquid, with a specific gravity of 1.190, and a 3-3-6&trade; standardized brix density of 53 (+/- 2% ), The yield is based on a proprietary ml/g range of 29ml/Xg (noting that much less Rhizophora raw material is used in 3-3-6&trade; fluid extract process than that used for Terradyne hot water decoction) from crushed, dried Rhizophora. The 3-3-6&trade; fluid extract requires no preservative (or refrigeration after opening), even claiming a labeled shelf life of 3 years. The delivery system was a 1 oz brown actinic bottle with a 1 ml capacity dropper.

Approx. 50% of the patients received the Terradyne fluid extract and 50% the Cedar Bear fluid extract.

## RESULTS

Of the 84 patients from whom this researcher was able to obtain a clinical report, the following results were obtained. Seventy nine percent (79%) of overall participants had either complete resolution of symptoms before or by the end of the 48 hour treatment period (the vast majority) or in those few remaining, significant improvement. Twenty one (21%) of the patients were not improved. Of significant note is that several of the patients with recurrent sinusitis were in the 79% group. These patients thereby avoided taking antibiotics; which more of them would have been apt to do, based on prior experience in this type of patient. These results were overall concomitant for both the 3-3-6 fluid extract and water decoction preparations, though it was noted that some respondents reported when they used half the dose for the 3-3-6 fluid extract they still obtained results concurrent with the standard prescribed dose for this study. This latter point begs the further question if a particular type of fluid extract preparation for *Rhizophora* also enhances and/or increases its efficacy and/or effectiveness, particularly where dose related factors are concerned.

## DISCUSSION

There is clear evidence that the hypothesis was supported. The Fijian *Rhizophora mangle* (Fiji Titi) appears to be effective for the vast majority of clients within 48 hours. Even patients with resistant, recurring sinus infections who invariably wind up on an antibiotic experienced resolution of their symptoms. Of course, these results need to be replicated in a controlled, double-blind clinical trial. Nevertheless, the impact appears to be significant and should be stimulus for further research.

The immediate implication for clinical practitioners is simple. At the onset of a cold or within 24 hours, Fijian *Rhizophora mangle* (Fiji Titi /Fiji Tea) in the concentrated fluid extract delivery systems created by Nature's Nurse, Inc. is a valuable, effective treatment. (The raw root tea is also effective but not the preferred delivery system by the vast majority of clients.) There were no reported, adverse side effects for any participant of any age in this study or that conducted by Ted Anders, Ph.d. and reported to this researcher. As the village herbalists informed Dr. Anders at the beginning of his research in 1998, this gentle, traditional medicinal rhizome appears to be appropriate for all ages from toddlers through senior adults.

## REFERENCES

- Duke, J.A. and Wain, K.K. *Medicinal Plants of the World*, 3 Volumes, 1981.
- Hernandez N. M. Rojas and Coto O. Perez, Antimicrobial properties of extracts from *Rhizophora mangle*, *Rev. Cubana Med Trop*, 30: 181-187, 1978.
- Premanathan, N., Kathiresan, K., Yamamoto, N., Nakashima, H. In-vitro anti-human immunodeficiency virus activity of polysaccharide from *Rhizophora mucronata* poir, *Biosci, Biotechnol, Biochem*, 63:1187-91, 1999.