LE Magazine October 1999

REPORT

Continued from Exploring the Amazon

Modern medicine men
In 1983 no U.S. pharmaceutical manufacturers were involved in Amazon rain forest research. Today, more than 100 are scouring the Amazon Basin for plant-based cures. Researchers called "bioprospectors" hail from pharmaceutical giants such Merck, Abbott, Bristol-Myers Squibb, Eli Lilly, Monsanto, SmithKline and Beecham.

In fact, a new pharmacological industry has sprung up, composed of an unlikely mix of plant collectors and anthropologists, ecologists and conservationists, natural product and nutritional supplement manufacturers, AIDS and cancer researchers, multinational executives and native shamans.

Among the bioprospectors is Virginia Tech's Kingston. In the last five years, he and his team have conducted 14,000 tests on more than 3,000 Amazon plant extracts. One of the anticancer compounds Kingston has discovered has made it through several stages of tests at Bristol-Meyers Squibb. Another drug, from a plant known as Eclipta alba, appears to work better at fighting fungal infections than the prescription medicine amphotericin B.

What's more, by synthesizing analogs, the team found enhanced anticancer activity in a new compound. "Now," Kingston says, "we're looking for others with more activity from which we can make analogs." In addition, the research team has discovered five rare plants and one previously unknown in Suriname, considered one of the top-50 biodiverse countries on the planet. Recently Kingston was awarded a grant that will permit him to remain another five years in the jungles of Suriname. But he knows his time there is limited-and that worries him.

Leslie Taylor also is concerned. For the last several years, she's been searching for Amazon plant medicines by "trekking through jungles, studying the plant knowledge of indigenous Indian shamans and South American herbal healers, and getting harassed in airport Customs with suitcases full of strange-looking, murky liquids, barks, leaves and roots."

Taylor says she became interested in herbal medicine after she was diagnosed with acute myeloblastic leukemia when in her mid-20s. Conventional medicine gave up on her after two years of traditional chemotherapy and other cancer treatments. "While the doctors sent me home to die," she says, "I turned to alternative medicine."

By taking natural supplements and employing other alternative remedies, Taylor says she was able to cure herself of her disease. And she developed a passion for learning about plant medicines. "It was during this research that I came across an herbal extract that was being used in Europe for cancer and AIDS patients with some interesting results," Taylor says. "The plant was called Cat's Claw (Unicaria tomentosa) and the source was the Amazon rain forest in Peru."

> **In 1500, Brazil's jungles were home to as many as 9 million Indians. By 1990, only 1 million remained. Today, there are fewer than 250,000.**

Taylor, whose company now sells the herb in the United States, headed off to the Amazon, and her life changed forever. "I fell in love the jungle, the people, the culture, the lifestyle and attitudes, the plants and trees, the incredible rivers." In the Amazon, Taylor studied plants with native shamans and village healers. Now, however, Indian healers are disappearing as fast as the forest.

Living libraries
In 1500, Brazil's jungles were home to as many as 9 million Indians. By 1990, only 1 million remained. Today, there are fewer than 250,000.

As miners and loggers strip the forests, the Indians who live there are forced to relocate. And as they enter the modern world, they leave behind herbal healing wisdom their tribes have accumulated over several centuries.

Ironically, many Amazon Indian tribes have begun to welcome tourists, who bring in much-needed revenue. "Tourists are becoming

more and more important for us who live in the villages and have been so isolated for so many centuries," says Ramsis Kajunamoor, chief of an Indian village in northeast Suriname.

But, he adds, "Along with the tourists come alcohol and drugs, and people who want to steal our gold or cut down our trees. These people do not have respect for our way of living. They see us just as a tourist attraction."

And, once they've had a taste of civilization, he says, young Indians are eager to leave the villages and their ancient way of life. Thus, when shamans die, there is no one to take their place and keep the healing wisdom of the ancestors alive. As Taylor puts it: "Each time a rain forest medicine man dies it's as if a library has burned down."

Saving the forest
In recent years, Suriname's Indians have been taking action to save their Amazon home. They've filed lawsuits and staged protests to halt destruction of the rain forest that covers nearly 95% of the country.

A few years ago, the government refused even to listen. Suriname, in fact, turned down a proposal from the Inter-American Development Bank to help finance the country's budget while it found ways to protect its forests from loggers. Last year, however, the Surinamese government gave in and set aside 4 million acres-a tract the size of New Jersey-as a nature reserve. The new protected area combines three existing nature reserves with two strips that had been targeted for harvesting by Asian logging companies.

Even so, many Amazon researchers remain skeptical. "How can you control development in an area where there is no control?" asks NASA biologist Compton Tucker. "It's the Wild West."

Kingston says he hopes that other Amazon Basin countries will follow Suriname's lead and take measures to halt destruction of the forest-or at least slow deforestation until more plants can be tested for medicinal properties. "It's a long, slow process," Kingston acknowledges. "And it's hard to know just how many drugs might be there in the forest."

Amazon Indians Speak Out

A generation ago, the Trio, Akurio and Wayana Indians of Suriname were just beginning to emerge from the Stone Age. Today, in the village of Palumeu, you're as likely to find men wearing faded T-shirts and battered Nikes as the loincloths that covered their ancestors.

That's ironic when you consider just how isolated Palumeu is from the rest of the world. To get there from Paramaribo, Suriname's capital city, I had to fly by propeller plane over the impenetrable Amazon rain forest, as green and seemingly unending as an ocean.

> **"Everyone is welcome here. But please do not send the ones who spoil our rivers, cut down our trees and kill our rain forests."**

The plane touched down in a grassy meadow. Again my transportation choices were limited. I could hike through dense, swampy forest, or travel by korjalen (dugout canoe) over wide, muddy rivers that I hoped were not infested with piranha.

When finally I arrived at Palumeu, I knew at once that I was setting foot in a world as strange to most people as Mars.

Curling smoke from cook fires assaulted my nostrils. Dogs howled mournfully at the blazing sun, and from time to time a spider monkey skittered down from a tree to snatch up bits of food. Village men escaped the overwhelming heat by lounging in hammocks, as women set cassava bread to dry on the thatched roofs of conical huts, and near-naked children imitated ancient hunting rituals by chasing one another with bamboo spears.

I was escorted to the tukuspan, or meeting hut, and introduced to Pecife, the village captain, or chief. "You must have a meeting house," Pecife told me. "Only then do you know that you are in a civilized village and not just some jungle camp. Here in our village we still have the knowledge of our culture."

But for how long? As loggers, miners and tourists overtake the Amazon Basin, Suriname's indigenous people are losing customs they have cherished for more than 10,000 years.

Not long ago, for example, Indian teenagers traditionally donned mats covered with ants and wasps. If the children stoically endured the resulting painful bites, they were welcomed into the tribe as adults. Now few teens undergo the ancient ritual. And ever fewer seem interested in the forest plants their people have used for centuries to heal a host of illnesses.

"Years ago, everyone knew about the different kinds of plants and trees," says Palumeu's shaman, a man who calls himself Piyasi. "We used the plants to heal ourselves and we had a system of singing until those who were ill felt well again."

"Now," Piyasi says, "only I have that knowledge in this village. The young ones don't have it anymore." Pecife acknowledges that his village depends on much-needed tourist revenues. But, he says, he is concerned about opening the door too far. "Send us your tourists," he tells visitors. "Everyone is welcome here. But please do not send the ones who spoil our rivers, cut down our trees and kill our rain forests." -JL

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