Medicine Quest: In Search of Nature's Healing Secrets
Mark J. Plotkin (Viking Press, 2000)

These excerpts are provided as a companion piece to ActionBioscience.org's October 2000 interview with Mark J. Plotkin. To read the ActionBioscience.org original interview, please click here.
American aviators preparing to fly over the jungles of Indochina during the Second World War were taught that the best way to survive if shot down was to "eat what the monkeys eat." While the overarching value of this advice was probably psychological (some monkeys have chambered stomachs capable of digesting leaves that would poison and possibly kill a human), this recommendation may ultimately prove more beneficial for medicinal purposes. For we are learning that, in many cases, instinct has programmed animals with an inherent knowledge of medicinal plants that our own species is only now beginning to appreciate and to study.

Learning from primates

Prior to the onset of the breeding season, [then Harvard graduate student Karen] Strier noted that the muriqui's (woolly spider monkey's) diet consisted primarily of the leaves of two tree species rich in antimicrobial compounds. During that same time of year, the monkeys visit the monkey's ear tree (so named because of the shape of the fruits) to feed. As a general rule, when monkeys find trees laden with edible fruit, they gorge themselves until little remains. Yet Strier wrote that the muriquis consumed a small portion of the fruits before decamping "as if they only need a taste to be satisfied." Once back at Harvard, she learned that these fruits are rich in stigmasterol, a chemical employed in the manufacture of progesterone, which is itself used in birth control pills. Plant hormones can affect animal fertility. Did the monkeys of this forest discover the birth control pills tens of thousands of years before their human cousins did?

Primatologist Dr. Ken Glander of Duke University has spent decades studying the howler monkeys of Central America and has reached conclusions that parallel those of Karen Strier. Glander hypothesizes that the howler monkeys eat a selection of plants that allows them to select the sex of their offspring! He notes that female howlers consume certain plants before and after copulation that they do not eat at any other time. Over two decades of study, Glander found that some howlers bore only male offspring, while others produced only females, an outcome unlikely due to chance.

In terms of intentionally using plants for medicinal purposes, the great apes of Africa are the most sophisticated members of the animal kingdom. Harvard primatologist Dr. Richard Wrangham observed chimpanzees in Uganda's Kibale Forest consuming a tropical daisy called Aspilia in the early 1980s. While chimps devour most of the plants in their largely vegetarian diet, Wrangham made note of the unusual behavior surrounding consumption of this species: the leaves were carefully chosen and then swallowed. Furthermore, the primates' faces appeared to indicate severe distaste, like a child taking castor oil. Because chimps, like people, are prone to parasitic infections, Wrangham hypothesized that the monkeys were consuming these leaves for medicinal (rather than nutritional) purposes. Wrangham brought Aspilia to the lab for analysis and received startling results: the plant contained a novel compound (they named it thiarubrine) that proved to have potent antibiotic, fungicidal, and vermicidal properties.

Toxins for healing

He [Eugene W. Schottel] and his colleagues analyzed the clover [spoiled sweet clover] for seven years before identifying and isolating the cause of its lethality: a chemical they named dicumarol. They correctly hypothesized that if too much caused a hemorrhage [in cattle after eating spoiled sweet clover], a miniscule amount might prove to be a useful anticoagulant. Today, dicumarol (and its synthetic analogues) are commonly employed as anticoagulants, particularly for the prevention and treatment of pulmonary embolism and venous thrombosis. In early 1951, an army inducement tried to commit suicide by eating warfarin [rat poison]. He failed to kill himself but did manage to induce a classic case of hemorrhagic sweet clover syndrome. The unhappy soldier was successfully treated with transfusions of normal blood and coagulants. This bizarre incident led to studies and eventual approval of warfarin (renamed coumadin) as an anticoagulant for human patients. How many cardiac patients realize that their physicians are prescribing rat poison for their ills?

As we saw in Chapter 1, tropical American dart frogs contain myriad fascinating chemical compounds. Until recently, however, we were unable to determine how the frogs made the poison... Some of the compounds (or their precursors) are found in insects eaten by the frog: alkaloids are taken in and stored from beetles, ants, and millipedes... Thus the painkiller ABT-594, currently being developed by Abbott Labs, supposedly from a frog poison, may actually be based on an insect poison that was presented to us by the frog!

Conservation for our health

If we can find new painkillers from frogs, new stimulants from porcupines, new antiparasitics from penguins, new laxatives from thrushes, new antibiotics from chimps, and new contraceptives from woolly spider monkeys, what else might be out there, in the rain forest, on the prairie, or inside the coral reef, being used by local species and awaiting our discovery of its benefit to our own species? What might have already been lost? When the Portuguese first arrived on the eastern shores of Brazil almost five hundred years ago, the population of muriqui monkeys probably numbered in the hundreds of thousands. Now their population has been reduced to a few hundred individuals, and more than 96 percent of their once magnificent forests has been destroyed. Who knows what we lost, either in terms of the actual chemicals, the species that produced them, or the primate knowledge of how to use them?

© Viking Press, 2000

Mark J. Plotkin, Ph.D., is president of the Amazon Conservation Team and research associate at the Smithsonian Institution's Museum of Natural History. He earned his academic credits at the universities of Harvard, Yale, and Tufts. Trained as an ethnobotanist, he conducts much of his research in tropical America. In his newest book, Medicine Quest: Dr. Plotkin goes beyond Tales of a Shaman's Apprentice, a cult classic of its genre, to explore the search for new medicines.

http://www.amazonconserv.org/index.php/183/Staff

Advertisement

Medicine Quest: In Search of Nature's Healing Secrets

Note: Because some of the information in this article may be outdated, it has been archived.
Buy a cheap copy of Medicine Quest: In Search of Nature's book by Mark J. Plotkin. A world renowned ethnobotanist combs the far corners of the planet to unveil nature's pharmacy and detail how scientists are harvesting it to conquer devastating Free shipping over $10. Dr. Plotkin's exciting new book recounts the search for new medicines in previously undocumented plant, animal, and microbial species in places both familiar, fascinating and foreign. With a near infinite amount of skill, passion, and knowledge, Dr. Plotkin gives the reader a glimpse of the new frontier of medicine and pharmacy that is at once both fascinating and horrifying. Medicine Quest begins by graphically demonstrating Read More.