Plant extract fights fungus

A California chemist has reached into the folk wisdom of east Africa and extracted two substances he believes could significantly enhance the effect of antibiotics against stubborn fungal infections.

The plant extracts, dialdehydes called warburganal and polygodial, still need to be tested in animals for safety and effectiveness before they are ready to be tested in human patients, cautions Isao Kubo, of the University of California at Berkeley. But preliminary tests on a variety of yeast cells grown in test tubes indicate that the chemicals or derivatives could act as valuable "advance scouts," punching holes in the plasma membrane that surrounds an invading fungus to win entrance for a previously ineffective antibiotic.

Kubo, who has spent 13 years analyzing medicinal plants used in east Africa and South America, described his most recent work at the annual meeting of the American Association for the Advancement of Science, in New York.

In his laboratory trials, Kubo mixed low doses of polygodial with a variety of antibiotics and checked each combination's effects against *Saccharomyces cerevisiae* (brewer's yeast), *Candida utilis,* which causes the infection candidiasis or thrush, and *Favus trichophyton,* the cause of athlete's foot. Particularly dramatic, Kubo says, was the effect of polygodial coupled with the drug actinomycin-D against *C. utilis.* Alone, the antibiotic kills some yeast cells, but it becomes 16 times more potent when combined with polygodial.

For the otherwise healthy person, fungal infections are more nuisance than health threat, kept in check by a strong immune system and by innocuous bacteria that customarily make their homes in the throat and gut. But when outside forces such as cancer chemotherapy or heavy doses of antibiotics derange the body's natural defenses, yeasts and other fungi can take up residence and cause serious health problems. A substance that enabled physicians to safely use lower antibiotic doses to kill the fungi would be a useful addition to the therapeutic arsenal, notes Steve Barriere, a clinical pharmacologist at the University of California at San Francisco.

Kubo first isolated warburganal in 1976 from the east African warburgia bush, though he only recently discovered its potent effect on yeast cell membranes. In open markets throughout Kenya, Kubo says, vendors sell the leaves and strips of dried bark from the bush as a sort of combination aspirin/curry. Whether a smart shopper is trying to remedy toothache, fever or constipation, or trying to cover the taste of meat gone slightly sour, warburgia is the plant of choice, he told SCIENCE NEWS. —*D. Franklin*

Photos: Joel Greenberg

Rhesus pieces of the behavior puzzle

The first 16 of an expected 200 rhesus monkeys have taken up residence at the new federal primate research facility in Poolesville, Md. The monkeys are moving from their former home at the University of Wisconsin, along with researcher Stephen J. Suomi, who left Wisconsin several months ago to head the new facility, a joint venture of the National Institute of Child Health and Human Development and the National Institute of Mental Health. Suomi, a protege of the late Harry Harlow, will continue to study the behavioral effects of separation from mother and examine the possibility of preventing the resulting "depression" through social interaction and possibly drugs (SN: 8/27/77, p. 139).

So far, he says, the monkeys have adapted well to their new outdoor surroundings on five acres of land. Clockwise, from left, a mother and her baby take a double drink from the pond; mother and child pay a visit to the opened-door cage; a lone monkey contemplates its new surroundings.

Insulin independence for some diabetics?

Acting on evidence that type I diabetes is an autoimmune disease — one in which the body is attacked by its own immune system — Canadian scientists report driving the disease into remission with the immunosuppressant cyclosporine. Twenty-nine of 47 newly diagnosed diabetics treated with the drug were freed, at least temporarily, from dependence on daily shots of insulin. These latest results from a study, done without control subjects, were presented this week by John Dupré of University Hospital in London, Ontario, at a meeting of the American Diabetes Association in Las Vegas.

The researchers stress that cyclosporine does not cure the disease, which usually strikes children and young adults. "By the time a patient is diagnosed as diabetic, he's lost a significant amount of pancreatic islets [insulin-producing cell clusters]. By giving cyclosporine, all we're hoping to do is stop this destruction," says Dupré's colleague Calvin R. Stiller. Attempts by other groups to halt the disease with different immunosuppressants have yielded inconclusive results, the researchers say. While cyclosporine treatment has some adverse side effects, Dupré says "we believe it's relatively benign, and more manageable" than these other agents.

The longer the lapse between diagnosis and treatment, the less effective cyclosporine appears to be: Of 11 patients who began therapy eight to 44 weeks after diagnosis of diabetes, only two became insulin independent. It's too early to know if cyclosporine-induced remissions will last, Dupré says.

Although the therapy costs between $4,000 and $5,000 a year, substantially more than insulin treatments, "the long-term benefit would be if one could prevent the terrible morbidity and mortality of that disease ... which has been grossly understated," says Stiller. An estimated 500,000 people in the United States have type I diabetes which, with its complications, kills over half of them within 40 years. "People forget this," Stiller adds. With newly available diagnostic techniques, "it is likely that within 10 years we'll be able to identify those individuals who are going to get diabetes before they get it," and perhaps block the onset of the disease with cyclosporine, he says.

—*G. Morse*