A Caffeine Drink Prepared from Bark
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rhizobium), *Psoralea* fixes nitrogen. Perhaps because of coumarin (not furocoumarin), the aromatic pods "have potential in perfume manufacture" (*1, 2, 3*).

A nitrogen-fixing fodder plant with edible seeds, containing a cure for leukoderma and possibly containing a cure for AIDS? Too good to be true! Psoralen, the furocoumarin, not to be confused with the aromatic coumarin, is used in the PUVA (psoralen-ultraviolet) treatment for psoriasis. It has side effects. Coumarin, banned by the FDA in food products in 1954 because of hepatotoxicity, was labelled a "Category I" carcinogen. WOI reports, before commenting on the edibility of the seeds, that oral administration of powdered seeds may induce nausea, vomiting, malaise, headache, and sometimes purging as side effects. WOI also reported vesicant action of the seed oil applied externally. After a review of the literature, Marles et al. (*4*) concluded "that coumarin has little toxic potential for humans with normal liver function . . . Coumarin does not appear to have anticoagulant, carcinogenic, mutagenic, teratogenic, or allergic activities." Furocoumarins, on the other hand, owe their biological activity to the fact that they undergo photochemical addition to nucleic acids (particularly DNA) in light and only in light. PUVA treatment of psoriasis or vitiligo may induce skin cancer.

The "heartbreak of psoriasis," effectively treated by PUVA in some cases, pales beside the awesome ailment known as AIDS. A recent article by Silberner (*5*) leads me to speculate that we'll be hearing much more about the psoralea/psoralen/psoriasis connection. Silberner wrote, "a light-activated drug [psoralen] is triggered in blood cells removed from the patient's body; when the cells are returned to the patient, they appear to act as a type of vaccine [against cutaneous T-cell lymphoma, a potentially deadly cancer] . . . Because of the treatment's success with this white blood cell cancer, the scientists are now investigating it for other diseases, including AIDS . . . in the laboratory, photopheresis somehow inactivates the AIDS virus in human white blood cells." In a letter dated 27 April 1987 Dr. Bruce Wintroub told me "we were able to inactivate the virus without inactivating the T-cells."

Literature Cited. (*1*) Anonymous. 1969. Wealth of India. Raw Materials 8:295–298; (*2*) Karnick, C. R. 1980. Ethnobotanical pharmacognostical and cultivation trial studies of *Psoralea corylifolia* Linn. Herba Hung. 19(2):27–36; (*3*) Allen, O. N., and E. K. Allen. 1981. The Leguminosae. Madison WI; (*4*) Marles, R. J., C. M. Compadre, and N. R. Farnsworth. 1987. Coumarin in vanilla extracts: its detection and significance. Econ. Bot. 41:41–47; (*5*) Silberner, J. 1987. Exposing cancer to a 'light' therapy. Sci. News 131(7):101.

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A Caffeine Drink Prepared from Bark.—The purine derivative caffeine or the related theobromine occur randomly and rather widely in the dicotyledons (*1*). They are present, however, in concentrations high enough to be useful to man as stimulants in only several families: in the Archichlamydeae—in the seeds of *Theobroma Cacao* L. and *Cola nitida* (Vent.) A. Chev. (Sterculiaceae); in the leaves of *Ilex vomitoria* Ait., *I. Guayusa* Loes., and *I. paraguariensis* St. Hil. (Aquifoliaceae); and in the seeds of *Paullinia Cupana* HBK. and bark of *P. Yoco* Schult. et Killip (Sapindaceae); and in the Metachlamydeae—in the seeds of several species of *Coffea,* especially *C. arabica* L. (Rubiaceae).

Yoco is undoubtedly the most curious caffeine-rich plant that people have bent to their use. A forest liana of the westernmost Amazon of Colombia, Ecuador, and Peru, it is the only species the bark of which is employed in the preparation of a stimulant drink. The liana is the most important non-food plant in the life of numerous tribes of Indians; when a local supply of the wild source is exhausted, the natives find it necessary to abandon their home-site and re-locate in another area where the plant is found in greater abundance. It appears that the liana is rarely or never cultivated, probably because it is extremely slow growing.

Although taxonomists are able to distinguish only one species and no genetic varieties, the Indians recognize and classify various "kinds" of yoco: *yoco blanco, yoco colorado, huarmy yoco, taruco yoco, yagé yoco, canaguche yoco, verde yoco,* and others. They are able to identify these kinds by name often at a considerable distance and without touching, tasting, cutting, or smelling any part of the plant.

In many Indian houses, a large supply of stems of the liana is kept, and few Indians will make long fishing or hunting expeditions without carrying two or three pieces of the trunk. These pieces are stored in the coolest part of the house and keep their stimulant properties for a month or longer.

The liana has a stout stem at least 3 in in diameter at the base. It is usually necessary to fell three or four or more trees before the liana falls to the ground. Starting at the root, the Indians cut the trunk into 1- to 3-ft pieces, utilizing all of the stem until it is, near to the top of the liana, too small to harvest.

When the yoco is to be prepared for use, the softer tissues of the stem (epidermis, cortex, phloem) are rasped, and the resulting mass is squeezed into cold water; warm water is never used. The caffeine-bearing sap is thus expressed. After straining, the rasped material is further squeezed and is then discarded. Each jícara-full (a gourd made of the fruit of *Crescentia Cujete* L.)—one dosage—consists of the resulting liquid of approximately 15 to 28 oz of rasped tissue.

It is the usual custom of the Indians to eat nothing until noontime but between 0500 and 0600 to drink one or two jícaras of yoco. This dose allays all sensations of hunger for several hours and supplies immediate muscular stimulation. It has been established that the tissues of yoco contain 2.73% of caffeine (*2, 3*).

In addition to its use as a stimulant, yoco is taken in large doses as a febrigue for malaria and to treat a bilious disease resulting from malaria that is common in the western Amazon.

The use of yoco has been known and reported in the anthropological literature since the turn of the century, but it was not botanically identified until 1942 (*4*). This discovery indicates what a rich field for ethnobotanical research still awaits the botanist and anthropologist in the Amazon, especially in the northwest Amazon.

Literature Cited. (*1*) Raffauf, R. F. 1970. A handbook of alkaloids and alkaloid-containing plants. New York; (*2*) Rouhier, A., and E. Perrot. 1926. Le "yocco," nouvelle drogue simple à caféine. Bull. Sci. Pharmacol. 33:537–539; (*3*) Perrot, E., and A. Rouhier. 1926. Le yocco, nouvelle drogue simple à caféine. Comptes Rend. Hebd. Séances Acad. Sci. 182:1494–1496; (*4*) Schultes, R. E. 1942. Plantae Colombianae II. Yoco: a stimulant of southern Colombia. Bot. Mus. Leafl. 10:301–324.

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