

Cancer-Inhibiting Plants Explored By USDA

A means for controlling cancer may well result from plant-collecting exploration now being undertaken by the U.S. Department of Agriculture.

Medicinal Plant Resources Laboratory Leader Robert Perdue of USDA's Agricultural Research Service says the program brings the broad spectrum of chemical substances in plants before a screen of selected cancer systems in living animals. Eventually the program carefully sifts out and identifies those chemical substances that have potential value for cancer chemotherapy in man.

During an early exploration, a tree from China called *Camptotheca* was sent to a U.S. Plant Introduction Station by an ARS plant explorer. In 1962, extracts from this rare tree exhibited definite anti-cancer properties. Since that time, intensive chemical and biological research has been focused on this plant.

The earliest known record of plant use for treating cancer or cancer-like disease is the Ebers papyrus — a document which dates from about 1550 B.C. This early Egyptian work recommended more than 40 plants for the treatment of tumors and warts and other possibly malignant growths. Some of these plants were barley, garlic, flax, absinthe, coriander, figs, onions, dates, and grapes.

It is interesting to note that this papyrus also mentioned two other plant products: yeast and the berries of juniper. The juniper berry is now known to produce a substance that is selectively toxic to cancer cells; yeast is the source of folic acid, which is also used in cancer therapy.

The present intensive search for anti-cancer drugs began in 1956, focusing first on synthetic chemicals and fermentation products. From January 1956 through 1971, more than 110,000 such materials were screened for anti-cancer activity.

Tests began on plant products during Fiscal Year 1957, and an average of about 5,000 have been tested during each year since 1961.

Plant materials are procured by botanists of ARS — the largest plant-procurement agency in the United States. Many other individuals or institutions have supplied smaller numbers of plant samples or extracts.

The procurement effort is centered in the Medicinal Plant Resources Laboratory — one of two ARS laboratories that have been procuring

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plant material for over 60 years for all phases of agricultural, biological, and chemical research.

Plant samples for anti-cancer screening by USDA botanists were first obtained in the United States, with some searches also conducted in Mexico. Later, samples were procured in Pakistan, Korea, Spain, Yugoslavia, Turkey, Uruguay, and Israel. Searches have also been made in Puerto Rico, Ethiopia, and Kenya, Tanzania, and Uganda, other parts of Africa. New projects are

under way in Taiwan, Panama, Brazil, Peru, India, and New Zealand.

USDA botanists have also obtained plant samples through commercial suppliers of seeds, plants and bulbs.

All collections are carefully documented to identify every sample. Accurate documentation is essential so that future USDA plant collectors will be able to return to the same location and procure duplicate samples, if necessary.