

impact

of the College of Agriculture and Life Sciences



Competitive Agricultural Systems in Global Economy Cancer Compounds in Desert Plants

Issue

Scientists at the Office of Arid Lands Studies' Southwestern Center for Natural Products Research and Commercialization (SCNPRC) in the University of Arizona's College of Agriculture and Life Sciences are working with other universities, with pharmaceutical companies and with other commercial entities to develop new biological and industrial products. The ultimate goal of this collaborative research program is to locate specialty chemicals in indigenous desert plants that can be grown as industrial cash crop and microorganisms that can be used to produce pharmaceuticals. Substances active against cancer are in particular demand.

What has been done?

The SCNPRC team selects plants, evaluates them chemically, tests products, performs biological assays, and determines how to grow and process plants on a commercial scale. In plants, active compounds may be

located in the roots, shoots, leaves, flowers or seeds, and in microorganisms these may be intracellular or extracellular. In the case of pharmaceutically active ingredients, those showing particular promise will progress into preclinical, then clinical testing for efficacy. In 1999, after examining several thousand desert plant species over the past seven years, a natural products scientist and his team found two substances so promising for pharmaceutical use that the original patents were formally revised and submitted as full patents for both U.S. and international coverage. One has topical activity against skin cancer and is now demonstrating other potential pharmaceutical uses. This collaborative group is now studying the impact of the other compound on the current testing model for new anti cancer drugs. They are also pursuing other plant- and microorganism-derived leads, including several more that are in the pipeline for in vivo testing.

Impact

The material that has been pursued the most extensively resulted in a new patent filed in May 1999 and an international patent filed in October 1999. This research has been pursued as a collaborative and multi-institutional project that ultimately could have a significant impact on the treatment and prevention of topical tumors, as well as other biological uses. Two compounds isolated from Sonoran desert microorganisms are currently undergoing animal studies. This is part of an ongoing effort to find unique applications from desert plants with development at the same time to allow for conservation and maintenance of the delicate desert ecosystem.

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