

Tocol Pharmaceuticals

The story of Tocol Pharmaceuticals involves two scientists working together, an “aha” moment at a seminar, the Amazon rain forest, and an alliance between UAMS and a university in Ecuador. While the story is fascinating by itself, it’s the result that matters most: two UAMS scientists, Césare Compadre, Ph.D. and Philip Breen, Ph.D. have invented a new form of Vitamin E that combats radiation poisoning.

Radiation damages the bone marrow that generates the body’s blood, and can yield anemia, weakened immunity, and uncontrolled bleeding. The dangers and side-effects of radiation therapy have been a major obstacle in cancer treatment. Before now, the only medicine that really

helped radiation victims was iodine, and this only treated radiation-related thyroid problems.

The new drug, tocoflexol, treats radiation poisoning more effectively than anything yet devised. The drug remains very expensive to synthesize, so Tocol Pharmaceuticals is using rain forest biology to bring costs down. BioVentures walked the scientists through a lengthy development process, which required large amounts of capital, familiarity with patenting and intellectual property, and the business acumen to turn research work into a real-world product. Tocoflexol will help cancer patients, and also provide a new tool against nuclear accidents and terrorism. By bridging the gap between science and business, BioVentures has helped the scientists do what they do best, gaining the well-deserved fruits of their labor and getting a new product to market.

Wisdom from the Rain Forest

Dr. Césare Compadre has visited Ecuador four times over the past year. He makes it very clear that his relation with the rain forest and its native people is not “go and take.” The processing facility that renders tocoflexol extract from a native plant will be located in Ecuador, providing jobs for an underdeveloped economy. The extract provides superior yields when it is fresh, and refining it locally reduces energy transport costs (and carbon waste). Working with locals in Ecuador, Dr. Compadre has helped establish that country’s first graduate chemistry program, modeled on the one at UALR.

Working with locals in Ecuador, Dr. Compadre has found much wisdom in the healing practices of traditional cultures. Free from constraints imposed by the slow, linear scientific method, native experts have their own clues for identifying useful substances in the rain forest. Their herbal wisdom is often later validated through scientific means.⁴ Tocoflexol is probably just the beginning. Dr. Compadre has patented a new drug that treats leukemia, although FDA approval will take time. By working with a native culture, and listening to its knowledge, Dr. Compadre has forged a relationship between Ecuador and Arkansas that will benefit both.



Dr. César Compadre in Ecuador with traditional healer Mama Ines in her medicinal garden. Photo courtesy of Dr. Compadre.



Dr. Compadre tapping into local knowledge in Ecuador.

⁴In October, 2015, a Nobel prize was bestowed on Chinese scientist Tu Youyou, who consulted herbal medical knowledge from 340 B.C. for help with clues in developing artemisinin, a drug that combats malaria. “Wisdom, Ancient and Modern.” Economist, October 10, 2015.