

Better than Swatting



Malaria research shows promise to treat disease effectively without high costs

by Vicky Cerino

It started humbly in a laboratory about nine years ago. Jonathan Vennerstrom, Ph.D., realized he was on to something exciting. One of the compounds he was working with to find a new way to treat malaria exhibited unusual, powerful activity.

So, as any researcher would do, he and his team did the science – they began the arduous and time-consuming process of testing their ideas and hypotheses over and over again, through trial and error. After two years, they had a compound they thought could yield a new class of inexpensive drug to treat malaria that would be more effective, with fewer side effects.

Their “clinical candidate” was born.

“We thought, ‘This is compelling, exciting data.’

It isn’t like designing a building or a road. There is no blueprint,” said Dr. Vennerstrom, University of Nebraska Medical Center College of Pharmacy associate professor of pharmaceutical sciences. “It’s a trial and error process, like most things in science. You have ideas and a theory. You do experiments to see if they are correct or not. Then you have to figure out why it didn’t work.”

So promising was the compound, they presented their discovery to Medicines for Malaria Venture (MMV), a nonprofit organization based in Geneva, Switzerland. MMV was created in 1999 to discover, develop and deliver new affordable anti-malarial drugs through effective public-private partnerships.

The organization saw the compound as a potential major new weapon to treat malaria. Since 2000, it has funded the project with \$5.5 million. The UNMC-led project includes Monash University in Australia and the Swiss Tropical Institute, with support from the F. Hoffmann-LaRoche pharmaceutical company.

Dr. Vennerstrom, who has been studying malaria for almost 20 years, credits the discovery to an effective and efficient trial and error process and new chemistry technology developed in Germany in 1997.

“We were making all different kinds of compounds. This particular one happened to provide us with something that was very potent,” Dr. Vennerstrom said.

The synthetic compound has properties similar to an effective malaria treatment that contains a derivative of a natural substance called artemisinin. Artemisinin has been used for more than 1,500 years in Chinese medicine to treat fever, but it remains costly to produce.

By drug development standards, the drug candidate, OZ277, has progressed quickly, from laboratory to technical and clinical development. Ranbaxy Pharmaceuticals, India’s largest drug company, is developing the drug candidate, and last year successfully completed a phase I clinical trial. Phase II began in January to evaluate the effectiveness of the drug candidate.

Along the way, the project has received international recognition.

In 2001, MMV chose the UNMC-led project as Project of the Year – its best and most successful of its 12 funded projects – achieving the most promising research results.

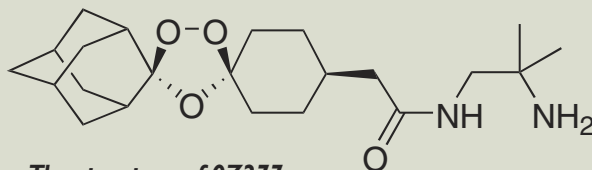
Last August, the team published a paper in the prestigious international science journal, *Nature*. The publication generated hundreds of news stories around the world. In June, Dr. Vennerstrom was featured in a British

Broadcasting Corporation (BBC) television documentary on malaria.

“We are very excited about this project. It has surpassed our expectations as it moved so successfully and rapidly through candidate selection and now drug development,” said Christopher Hentschel, Ph.D., chief executive officer, MMV. “The need to develop a low-cost, potent synthetic antimalarial drug is more urgent than ever. This could be the biggest breakthrough in malaria treatment in more than 80 years.”

While Dr. Vennerstrom and his team follow the clinical progression of their work, they continue working in the lab to improve the compound.

“We’re happy with the speed of the process. If all goes well, we hope a drug will be registered by 2008 and be available to the millions of people who live with this terrible disease everyday, but there’s still a lot of work left,” Dr. Vennerstrom said. ■



The structure of OZ277, a potential new drug to treat malaria.

Jonathan Vennerstrom, Ph.D., a professor in the College of Pharmacy, has received world-wide acclaim for his research on malaria.

