



PROFILE: ARATA KOCHI

Fighting Words From WHO's New Malaria Chief

Just months into his new job, Arata Kochi is battling big pharma on drug resistance

A new heavyweight champion has stepped into the ring to fight the global scourge of malaria. Less than 3 months after taking office as director of the World Health Organization's (WHO's) malaria program, Arata Kochi wants the world to know that he's ready to rumble. At a 19 January press conference at WHO headquarters in Geneva, Switzerland, Kochi issued a 3-month ultimatum to the global pharmaceutical industry to stop selling the single-dose form of the drug artemisinin because of the danger of creating resistant strains of the malaria-causing parasite. Kochi threatened to name and shame 18 offending drug companies and said his next step would be to lobby for a "complete ban" of those companies' other malaria medications. "The quiet approach will never work," Kochi told *Science*.

The announcement is a departure for WHO, an international organization that usually relies on consensus before taking action. "We have often been criticized for being slow and ineffective," says Pascal Ringwald, a medical officer in WHO's Roll Back Malaria program. "But if resistance [to artemisinin] appears tomorrow, the WHO cannot be blamed for saying nothing."

First extracted from the common wormwood shrub by Chinese scientists in 1972, artemisinin is the most effective drug today against malaria, with a single dose curing 90% of cases within days. Because resistance to the other malaria drugs is on the rise everywhere, artemisinin is

seen as the last defense against a disease that kills 1 million people each year, most of them African children. Initially, scientists thought it unlikely that the parasite could develop resistance to artemisinin because of its mode of action—a peroxide group that releases destructive oxygen atoms. But both the exact mode of action and the possibility of resistance are still in doubt, and experts are alarmed at the recent discovery of a mutation in the parasite that reduces its sensitivity to the drug (*Science*, 9 December 2005, p. 1607).

Although no one has yet died of artemisinin-resistant malaria, says Ringwald, "the warning signs are all there." To prevent resistance, scientists and WHO officials have been urging governments for the past several years to use artemisinin only in cocktails of multiple drugs called artemisinin-based combination therapy (ACT). "If we lose artemisinin, we lose ACT, and it could be 10 years before a new drug is available, which would be a catastrophe," says Ringwald.

Kochi may be a newcomer to the malaria scene, but he's no neophyte to global health. A Japanese public health physician trained at Harvard University, he directed WHO's tuberculosis (TB) programs for 10 years, turning a fledgling two-member staff into one of its flagship programs. "Kochi had a vision" for how to combat TB, says Nils Billo, director of the Paris-based International Union Against

Tuberculosis and Lung Disease, "which now most of the countries of the world have adopted and implemented." Despite his efforts, however, TB remains a major threat—an appeal for a fresh attack on TB was launched last week in Davos, Switzerland.

With Kochi now focused on malaria, his bold opening move is yielding mixed reviews. "The need to switch from monotherapy to ACT was recognized years ago," says Brian Greenwood, director of the London School of Hygiene and Tropical Medicine. "But antagonizing big pharma is not a sensible strategy." Greenwood argues that there is little money to be made developing and selling drugs for a disease that is nearly exclusive to the developing world and that "these companies are really only doing this for good public relations. We need their help if we're going to get medicines into poor communities." An official at one of the biggest companies on Kochi's list, Paris-based Sanofi-Aventis, told *Science* they plan to comply but added: "It is the responsibility of local authorities to implement the switch to ACTs, which is more complex and requires education."

Others involved with global health praise Kochi for "taking a stand and saying something that we've all been thinking," says Chris Hentschel, CEO of the Geneva-based Medicines for Malaria Venture. "We're behind him." Hentschel says that not all companies are making malaria medicines "just for charity" and that in some cases "they have been unhelpful."

Right or wrong, Kochi faces an uphill battle. "WHO has no powers to enforce and a very small budget," says Hentschel, "so the most it can do is damage a company's reputation." He predicts that smaller companies may ignore the ultimatum "because they feel they don't have any reputation to lose." One way WHO could make an impact, he says, would be to influence the

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decisions of big drug purchasers such as the U.N.'s children's fund UNICEF or the Global Alliance for Vaccines and Immunization.

For his part, Kochi seems confident. "When I named countries that weren't doing enough to fight TB in 1996, they responded and improved," he says. As proof that his strategy is sound, he notes that two companies on his list of 18—Switzerland-based Mepha and "a generic drug company"—have already promised to comply.

Kochi says his next targets are "gaps" in malaria research. "Malaria epidemiology is very weak," he says, "and we also need more consensus on how to diagnose the disease." Without "better science," Kochi says, strategies to combat malaria "will continue to be like religion, based on faith."

—JOHN BOHANNON

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