CD47 prevents the RBC destruction.

Other experiments pointed to macrophages as the purveyors of the destruction. For example, the CD47-deficient RBCs were quickly destroyed when they were transfused into mice that lacked functional B and T cells, indicating that those cells were not involved. In contrast, removing the spleen, the organ where old and faulty RBCs are usually disposed of by macrophages, prevented RBCs from being eliminated. Evidence confirming that macrophages use SIRPα to recognize CD47 came when the researchers added an antibody against SIRPα to a mixture of macrophages and RBCs. Now, the "blindfolded" immune cells eliminated even normal CD47-bearing RBCs.

Taken together, Lindberg says, these results suggest that "CD47 is a safeguard against macrophages going off too easily. If CD47 is present [on a target cell], the macrophage leaves it alone, but if it's absent the macrophage goes: 'Let's get cracking!' "

To Colonna, CD47's new job makes perfect sense. "RBCs don't express MHC molecules, so they need something else to mark them as self," he says. Lindberg adds that his findings might also explain the anemia seen in individuals who fail to express Rh blood markers on their RBCs. These patients also have a drastically reduced CD47 density on their RBC surfaces, and this may make them more prone to elimination by macrophages, speculates Lindberg.

Still to be determined, however, is whether changes in CD47 concentrations on cells play a role in other pathological conditions. There are hints that they might. For example, ovarian cancer cells express CD47 at a much higher than normal level. "This may signal 'I'm self, don't kill me,' " Lindberg says.

Another open question centers on the role of SIRPα in other tissues. Unlike other inhibitory immune receptors, SIRPα is found on brain cells, for instance. "I'm very intrigued by that," says UCSF's Lanier. "There may be an even broader context in which we need to think about these inhibitory receptors. I guess now the neuroscience people need to get busy." **–MICHAEL HAGMANN**

ALTERNATIVE MEDICINE

Herbal Product Linked to Cancer

A Chinese herb that damaged the kidneys of dozens of Belgian dieters in the 1990s appears to pack a vicious second punch—cancer and precancerous lesions, according to a report in the 8 June issue of *The New England Journal of Medicine*. These findings draw one of the strongest links yet between use of a herbal product and cancer and, critics argue, serve as a grim warning that dietary supplements need more regulation.

The unfortunate subjects of this study are a subset of some 10,000 Belgian dieters, who between 1990 and 1992 took a mixture of Chinese herbs and Western drugs prescribed by weight-loss clinics. After dozens of dieters developed symptoms of kidney failure, investigators discovered that Belgian pharmacists had been using mislabeled Chinese herbs to concoct the diet pills. Instead of *Stephania tetrandra*, pharmacists had packed the pills with derivatives of the herb *Aristolochia fangchi*, known to damage kidneys and to cause cancer in animals. At least 70 people experienced complete kidney failure, and some 50 more suffered kidney damage severe enough to require treatment.

Beautiful but deadly. Plants in the *Aristolochia* genus, used in Chinese herbal preparations, can cause kidney damage and perhaps cancer.

The first urinary tract cancers were found among these patients in 1994. To deter onset of the disease in others, doctors at Erasme Hospital in Brussels counseled patients whose kidneys and ureters had stopped functioning to consider surgical removal of the organs. Thirty-nine people opted for the operation over the past several years. When a team of researchers—coordinated by kidney specialist Joélle Nortier—inspected the excised tissues, they were startled to discover that cancer had already developed in 18 patients, and precancerous lesions (dysplasia) were present in 19 others. Prescription records confirmed that patients who had taken the highest cumulative doses of *Aristolochia* were most likely to have cancer. As further evidence that *Aristolochia* was to blame, the team found in all 39 patients evidence that *Aristolochia* had bound to DNA, a process that could trigger mutations.

Belgium banned the import of *Aristolochia* in 1992. But there's little to prevent a similar herbal disaster in the United States, asserts David Kessler, dean of Yale University School of Medicine and former commissioner of the Food and Drug Administration (FDA)—especially because he was just able to purchase *Aristolochia* in capsule form, he writes in an accompanying editorial. Unlike food additives and drugs, which are subjected to strict premarket tests for safety and effectiveness, products labeled "dietary supplement" may enter the market untested, thanks to the 1994 Dietary Supplement Act. In effect, FDA cannot restrict the use of supplements unless substantial harm has been proven, Kessler says. "You shouldn't have to wait for harm to occur before you do a systematic safety review," Kessler told *Science*. "It's time to have a premarket safety system."

Others argue that FDA's hands are not tied as tightly as Kessler implies. Varro Tyler, a retired dean of the School of Pharmacy at Purdue University in West Lafayette, Indiana, considers company-sponsored premarket testing impractical—the manufacturers simply can't afford it. Instead, he backs a recommendation by a 1997 presidential commission that called for FDA to convene an expert committee to review the wealth of information that already exists on botanicals and then inform consumers and manufacturers about unsafe preparations. "No company in its right mind" would market preparations deemed unsafe, he says. "That would be signing their own death warrant in terms of legal actions."

Last month, the FDA distributed warnings to health professionals and the supplements industry about the dangers of *Aristolochia*. In a few weeks, the agency plans to block the herb's entry into the United States. The action is long overdue, says Norman Farnsworth, director of the Center for Dietary Supplements Research on Botanicals at the University of Illinois, Chicago. The dangers of *Aristolochia* are so well known, he says, that Germany banned it in 1981 and the World Health Organization issued a warning on the herb in 1982. If the FDA "had been doing its job," he says, "they would have banned this stuff 10 to 15 years ago."

–LIESE GREENSFELDER

Liese Greensfelder is a writer in Nevada County, California.

ASTROPHYSICS

Galaxies, Black Holes Shared Their Youths

ROCHESTER, NEW YORK—The origin of massive black holes and the galaxies that surround them is a chicken-and-egg conundrum. In one model of galaxy formation, whopping black holes arose early in the history of the universe. Then, gas spiraling into

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