

Super Water Kills Bugs Dead By Skip Kaltenheuser

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A California company has figured out how to use two simple materials -- water and salt -- to create a solution that wipes out single-celled organisms, and which appears to speed healing of burns, wounds and diabetic ulcers.

The solution looks, smells and tastes like water, but carries an ion imbalance that makes short work of bacteria, viruses and even hard-to-kill spores.

Developed by [Oculus Innovative Sciences](#) in Petaluma, the super-oxygenated water is claimed to be as effective a disinfectant as chlorine bleach, but is harmless to people, animals and plants. If accidentally ingested by a child, the likely impact is a bad case of clean teeth.

Oculus said the solution, called Microcyn, may prove effective in the fight against superbugs, crossover viruses like bird flu and Ebola, and bioterrorism threats such as anthrax.

The company has just been granted approval in the United States to test the solution in the treatment of wounds, and already has government approval in Europe, Canada and Mexico for diverse uses, from disinfectant to wound irrigation.

Doctors conducting trials in Mexico and India are recounting stories at international conferences of their surprise at another feature of the solution: It speeds the healing of severe burns and diabetic ulcers.

According to Hoji Alimi, founder and president of Oculus, the ion-hungry water creates an osmotic potential that ruptures the cell walls of single-celled organisms, and out leaks the cell's cytoplasm. Because multicellular organisms -- people, animals, plants -- are tightly bound, the water is prevented from surrounding the cells, and there is no negative impact.

While super-oxygenated water is nothing new -- Microcyn has its roots in efforts to decontaminate nuclear reactors' cooling pipes, according to Alimi -- it is typically effective for only a few hours after it is formulated. To keep it handy, hospitals and labs must invest in extremely expensive machines costing \$100,000 or more.

Oculus has developed a new formula with a shelf life of at least a year, which opens up an array of potential applications.

And unlike prior formulations of super-oxygenated water, Microcyn is pH-neutral, so it won't damage healthy tissue. This has prompted successful experiments in the

treatment of challenging wounds like diabetic ulcers.

Physicians in Mexico using Microcyn observed rapid healing of burns and ulcers that the body could not repair for a decade or more because of infections, said Dr. Andres Gutierrez, head of the cell-therapy unit at the National Institute of Rehabilitation in Mexico City and an adviser to Oculus.

"Mexico was early to obtain the technology and give regulatory approval," he said. "Doctors using the product noticed the horrific smell of diabetic wounds was gone." The smell came from bacteria.

Dr. Amar Pal Singh Suri of the Diabetic Foot Care Clinic in Delhi, India, began experimenting with Microcyn after learning of it last fall in Germany. Trying it on a severe necrotic wound of a patient whose only remaining option was amputation, Suri said he was surprised to see rapid improvement and the growth of healthy skin tissue.

"I shifted my other patients onto Microcyn treatment and we are now treating more than 50, with very good results," said Suri.

India leads the world in diabetes, with 37 million people affected. "Every year, diabetics in my country suffer a million foot or lower-leg amputations," said Suri. Personal tragedy aside, "saving a foot is a fourth the cost of amputation and an artificial limb," he said.

Chronic wound care is a multibillion-dollar market worldwide. The solution will be available to U.S. physicians in June, said Alimi. Trials are being organized for preoperative disinfectant, dental applications and burn and diabetic treatments, he said.

The company is keen to explore other applications, like tools to combat bioterrorism and user-friendly antiseptics and disinfectants to battle superbugs that are resistant to antibiotics and vaccines.

Alimi says he's giving serious thought to a misting device that could sterilize the air of hospital wards in the grip of epidemics. The solution also might be used as a hospital hand wash -- a user-friendly, non-caustic disinfectant would benefit patients if it enabled medical workers to wash their hands more often, he said.



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