Super-oxidized water kills bacteria; demonstrates potential for healing

BY REBECCA BRYANT
STAFF CORRESPONDENT

International report — Mix salt and water and you get saltwater, which has long been thought to have healing properties. Put the ingredients through an electrolysis process to kick a single oxygen electron out of its orbit, and the result is a super-oxidized water (SOW) that kills bacteria, viruses, fungi and spores.

Although SOWs have been around for at least 20 years, their use has been hampered by two problems. First, scientists and engineers could not deliver a stable product. Indeed, SOWs had a shelf life so short — a few hours — they had to be manufactured on site, using equipment that could cost more than $100,000. Second, SOWs were either acidic or alkaline, leading to tissue damage and corrosion of equipment.

pH neutral SOW
Several years ago, all this changed dramatically when Oculus Innovative Sciences of Petaluma, Calif., patented the first process capable of producing a stable, pH-neutral SOW.

Andrés A. Gutiérrez, M.D. Ph.D., who directs the Cell Therapy Unit at the National Institute of Rehabilitation in Mexico City and serves as a medical advisor to Oculus explains, "This is the first time anyone had been able to ship the solution, instead of the equipment to make it."

Physicians worldwide who had been following SOWs began to investigate the new product, often skeptically. Anecdotal reports of rapid healing wounds began to circulate at medical conferences.

Mexican doctors led early research efforts. Dr. Gutiérrez reports that they conducted a trial of second and third-degree burn patients divided into two cohorts: patients treated with standard hospital protocols (control) and patients treated with Microcyn (the Mexican brand of Dermacyn.)

"The average hospital stay for the control group was 28 days compared to 14 days for patients treated with Microcyn," Dr. Gutiérrez says. "Also, 46 out of 64 patients in the control group required antibiotics but only six out of 64 in the Microcyn group needed them."

In May, following on the footsteps of regulatory agencies in Canada, Mexico and Europe, the U.S. Food and Drug Administration (FDA) cleared Dermacyn to lubricate, moisturize, clean and debride acute wounds and burns. The product is rated as shelf-stable for up to 12 months. It requires no dilution, mixing or special handling.
Mechanism of action
SOWs appear to work as an anti-infective agent by denaturing proteins in the membrane of single-cell organisms. Differential pressures inside and outside the weakened cell wall cause it to burst. Scavenger cells clean up leftovers.

Multi-cellular organisms are immune to death by implosion because their clumping behavior leaves less membrane exposed. Alberto Piaggesi, M.D, consultant diabetologist at the University Hospital of Pisa, Italy, has been using Microcyn on diabetic foot wounds.

“I suspect that the efficacy and safety of Microcyn relies not only in its bactericidal effect — which has been proven both in vitro and in vivo — but also on its possible interaction with wound biology, since many of the molecules present in the solution have been demonstrated in other contexts to interact with cells and proteins present in healing wounds,” he says. “It may well be that Microcyn could positively enhance wound healing processes, though this has yet to be challenged and demonstrated.”

Benefits of SOWs
If SOWs prove to be an inexpensive disinfectant — the solution is currently sold by prescription only for $16.80 per 8 oz. bottle, this could help reduce human susceptibility to epidemics.

“I don’t know of any resistance to this solution,” Dr. Gutiérrez says. “So far it will kill any kind of bacteria, mycobacteria, spores, fungi and viruses.”

He adds, “If we can go back to water for cleaning and disinfecting, the world will be a much better place because we are not polluting our environment.”

He points out that Dermacyn has a very low toxicity factor compared to other broad-spectrum alternatives. For example, when hydrogen peroxide is applied topically, 100 percent of human fibroblasts die within five minutes. In contrast, 80 percent of fibroblasts persist 30 minutes after treatment with Dermacyn.

He further reports that hydrogen peroxide oxidizes DNA, causing mutagenesis. Dermacyn does not.

The solution breaks down into water, sodium and chlorine (most of the chlorine in salt is stripped during electrolysis).

Other uses for SOWs
Emerging reports suggest that this anti-infective agent also blocks the inflammatory process and speeds the healing of burns, wounds and diabetic ulcers. Clinical trials are under way to investigate additional uses of Dermacyn/Microcyn on several continents. Some of the uses under investigation include: preoperative disinfectant; treatment of periodontal disease and skin disorders; internal irrigation for fistulas, fascitis and peri-tonitis; and enhanced healing of chronic wounds.

Oculus also hopes to develop antiseptics and disinfectants that can be misted in the air to battle infectious diseases. DT

For more information: www.oculusis.com

© Reprinted from DERMATOLOGY TIMES, July 2005 AN ADVANSTAR PUBLICATION Printed in U.S.A.
Copyright Notice. Copyright by Advanstar Communications Inc. Advanstar Communications Inc. retains all rights to this article. This article may only be transported or printed for personal use. User may not actively save any text or graphics/photos to local hard drive or duplicate this article in whole or in part, in any medium. Advanstar Communications Inc. home page is located at http://www.advanstar.com.