

## Research on Oxygen Use in Skin Care

**Oxygen and its Role in Wound Healing.** Since our evolution as aerobic organisms we have become dependent on oxygen as a catalyst and energy source for many cellular functions including maintenance, metabolism, and repair. Oxygen has a significant role in wound healing, being essential to provide the additional energy source for the repairing process. (more)

**History of Oxygen Therapies.** Disease microbes have no enzyme shields. When oxygen is introduced into the area it attacks microbes without a coating and diseased cells with deficient wall enzymes. It oxidizes them, allowing them to be cleared from the body and replaced with healthy new cells. The broad application of oxygen therapy in medicine is based on the simple principle that diseased cells cannot exist in the presence of oxygen and that cells cannot become diseased if they are supplied with sufficient oxygen. (more)

**Scientists Identify a New Role for Oxygen in Wound Healing.** A key characteristic of problem wounds is that they are hypoxic, or suffer from poor oxygenation, meaning too little oxygen is available to initiate the reactive oxygen-dependent healing processes. Ohio State University medical researchers have demonstrated that reactive oxygen species at appropriate levels can support the healing of wounds, and specifically that wounds can generate their own low concentration of hydrogen peroxide, which has a role in healing. (more)

**Oxygen tensions and infections: modulation of microbial growth, activity of antimicrobial agents, and immunologic responses.** Oxygen tensions play an important role in the outcome of infections. Oxygen is cidal or static for microorganisms that lack defenses against oxidants. (more)

**Interactions of the oxygen-dependent antimicrobial system of the human neutrophil with difloxacin, ciprofloxacin, pefloxacin and fleroxacin in the intraphagocytic eradication of Staphylococcus aureus.** Observations suggest a synergic interaction between fluoroquinolones and the O<sub>2</sub>-dependent antimicrobial systems of phagocytes in the eradication of intracellular microbial pathogens. (more)

**Antimicrobial reactive oxygen and nitrogen species: concepts and controversies.** Phagocyte-derived reactive oxygen and nitrogen species are of crucial importance for host resistance to microbial pathogens. Decades of research have provided a detailed understanding of the regulation, generation and actions of these molecular mediators, as well as their roles in resisting infection. (more)

**Oxygen, wound healing and the development of infection.** A continuous supply of oxygen to the tissue is vital for the healing process and to resist infection. External factors may decrease the peripheral oxygen supply, but supplementary perioperative oxygen reduces the surgical wound infection rate to half in patients having colorectal resections. (more)

**Hyperbaric oxygen therapy for wound healing.** Oxygen is one of the most versatile and powerful agents available to the modern medical practitioner. The therapeutic use of oxygen under pressure is known as hyperbaric oxygen therapy (HBO<sub>2</sub>) and has been used to assist wound healing for almost 40 years. (more)

**Supplemental Oxygen May Reduce Surgical Site Infections.** Supplemental oxygen can reduce surgical site infections (SSI), according to the results of a double-blind, randomized trial published in the Oct. 26 issue of JAMA. The editorialists suggest that surgeons should encourage use of higher oxygen tensions. (more)

**Trial Finds Extra Oxygen During Surgery Reduces Wound Infections.** Now a randomized, double-blind study of adults undergoing open colorectal surgery procedures at 14 Spanish hospitals found that patients who received 80% supplemental oxygen during surgery and for six hours afterward had a 39% lower risk of surgical site infections compared with those who received 30% oxygen. (more)

Stress slows wound healing; oxygen helps. Wound healing is slow when an animal is stressed, but extra oxygen almost completely reverses the effect, according to researchers at the University of Illinois at Chicago. (more)