

Industry/University Center for Biosurfaces (IUCB)

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Superior Relief From Dry Eye Problems

Many people suffer from “dry eye” problems, or a “gritty” sensation when blinking in a dusty environment. A significant improvement in the lubricity of in-the-eye comfort formulations has been achieved with the introduction of a borate-buffered solution of HP Guar containing active demulcents polyethylene glycol and propylene glycol. Researchers at the Industry/University Center for Biosurfaces (IUCB) developed a new tissue-on-tissue testing protocol that demonstrated the superior reduction of “blinking” friction associated with addition of this novel solution compared to the normal saline-wetted tissue surfaces.



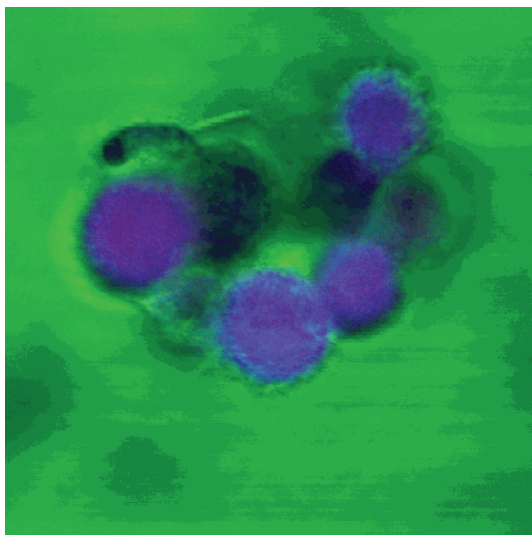
Previously available test methods that employed synthetic materials lubricated by various formulations, while moving back and forth over one another, did not reveal the clinically relevant superior lubricity for the borate-buffered HP Guar formulation. Synthetic materials articulated with preserved tissue surfaces did not exhibit the very low coefficients of friction actually obtainable in the tissue-on-tissue test system. The scientific lesson is that if results are to be predictive of actual clinical outcomes, then laboratory simulations of biological joints, and of other situations where bioadhesion is important, must adequately replicate the complex natural tissue surfaces involved. The new measurement technology revealed the superior reduction of friction obtained with tissue-on-tissue articulating (“blinking”) lubricated with just a small droplet of a solution containing a particular gellable polymer. This same solution showed superior protection of living eye-surface cells from damage by desiccation and chemicals and gave excellent clinic comfort to patients using this new “artificial tears” formulation. Alcon Laboratories of Fort Worth, Texas has brought this new formulation to market, under the trade name SYSTANE. By the end of calendar year 2006, annual commercial sales of the SYSTANE “artificial tears” solution were approaching \$80,000,000. For more information, contact Robert Baier at the University at Buffalo, 716.829.3560, baier@buffalo.edu.

Allergy Friendly Room Program

Previously, there have only been specific individual products available to improve indoor environments. Pure Solutions LLC has developed a patent pending process that is now being tested at the University at Buffalo's Industry/University Center for Biosurfaces (IUCB). The process provides pre-packaged allergy friendly rooms to the hospitality market, as well as commercial and residential markets. Pure Solution's allergy friendly rooms process offers multiple interventions to substantially improve an indoor environment and has added a quarterly maintenance program that will maintain the hygienic conditions over a 24-month period. The process substantially reduces particles, bacteria, mold spores and fungi in indoor environments. An added benefit is energy savings of 25% or more through the cleaning and sanitization of heating and cooling coils in an air-handling unit. The company has developed a worldwide licensing program and has partnered with companies in the U.S., Canada, Dutch Caribbean, Barbados, United Arab Emirates, Singapore, Scandinavia, Malaysia and China to provide its allergy friendly room technology to markets around the world. For more information, contact Robert Baier at the University at Buffalo, 716.829.3560, baier@buffalo.edu.



Inadvertent Implants? Visualizing Lung Cell pH



Inhaled particles and pollution can stress lungs, causing asthma and other diseases. Indigestible fibers, too long to be engulfed, cause lung disease. Most difficult to remove are long, thin asbestos-like fibers. Researchers at the Industry/University Center for Biosurfaces (IUCB) have shown how the body protects itself against safe insulation glass fibers, and how to select formulations for new, safe building materials. A surprise has been the discovery of a new use for the insulation fibers, as scaffolds for regenerating body tissues. "Chemistry in action" is recorded and displayed using laser photonics combined with confocal microscopy to take "visual slices" through living cells. Living cells take in a dye that gives off fluorescent rays of two different colors, red for acid production and blue for alkalinity. Lung cells digest away respirable fiber-glass by an acid attack that shortens them, and an engulfment into the cells that allows them to be digested and carried away before disease processes can be triggered. For more information, contact Robert Baier at the University at Buffalo, 716.829.3560, baier@buffalo.edu.