

DSS's Impact BioMedical Reports Positive Test Results for its 3FDB "DEET Booster" Technology

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ROCHESTER, N.Y., Aug. 23, 2021 (GLOBE NEWSWIRE) -- Impact Biomedical, Inc., a wholly owned subsidiary of Document Security Systems, Inc. (NYSE American: DSS), along with its scientific research partner Global Research and Discovery Group Sciences, GRDG, announced today encouraging results from clinical tests of its 3FDB ("DEET Booster") technology. These results suggest that 3FDB can boost the effectiveness of mosquito repellants, specifically DEET.

Daryl Thompson, Director of Scientific Initiatives at GRDG, stated, "These tests represent an important development in addressing mosquito borne diseases and could signal a new frontier of protection strategies."

Mosquitos, host to a variety of diseases, including Yellow Fever, West Nile, malaria, dengue, Zika and others, are responsible for more than one million deaths worldwide annually, according to the National Institutes of Health. Working with an independent lab, GRDG conducted three tests involving the mosquito (*Aedes aegypti*).

First Test:

The first test examined 3FDB / DEET concentrations (1% 3FDB with 0.5% DEET) that could be suitable for use in fragrances, shampoos, soaps, and detergents. The mixture was tested against an untreated control group and a group treated with DEET (0.5%) alone over three-, five-, and eight-hour periods.

The lower concentration mixture outperformed DEET alone. After three hours, the lower concentration mixture had a 74% repellency rate, while the DEET alone had a repellency rate of 38%. After 5 hours, the 3FDB mixture had a repellency rate of 39%, compared to 22% for DEET alone. After 8 hours, the 3FDB mixture scored a repellency rate of 47%, compared to 15% for DEET alone.

"As was observed from these tests, adding the 3FDB/DEET mixture to everyday household items increased the protection against mosquito bites over various periods of time," said Thompson. "The creative application of this type of technology allows for new, unobtrusive ways to repel mosquitos."

Second Test

A second test comparing shirt fabric impregnated with 3FDB and untreated shirt fabric, demonstrated that 3FDB impregnated fabric provides better protection compared to untreated fabric. After 15 minutes, the 3FDB fabric repelled 93% of mosquito landings, while the untreated fabric repelled only 14%. The impregnated fabric stopped 100% of the probes, compared to 17% for the untreated fabric. Probes occur when a mosquito finds a host and probes for a blood vessel. In fact, throughout the testing, which included measurements after six hours and eight hours, the 3FDB impregnated fabric continued to repel 100% of mosquito probes. The untreated fabric only repelled 14% of landings and 12% of probes after six hours. After eight hours, the untreated fabric scored negative percentages, which represented an *increase* in activity. In other words, after eight hours, the untreated fabric seemed to attract mosquitos instead of providing protection.

Third Test

The final test tested higher concentrations of 3FDB for a longer duration. A mixture of 10% 3FDB with 5% DEET appeared to increase the effectiveness of 5% DEET alone at the 3-, 5-, 8-, 12-, 15-, and 18-hour marks. After three hours, the 3FDB / DEET mixture had a repellency rate of 98%, compared to 85% for DEET alone. After eight hours, the 3FDB mixture had a repellency rate of 95%, compared to 62% for DEET alone. After 18 hours, the 3FDB mixture remained strong, having a repellency rate of 78%, compared to 53% for DEET alone.

GRDG Chief Scientific Advisor Dr. Roscoe M. Moore, Jr., United States Assistant Surgeon General (Retired) and former Epidemic Intelligence Service (EIS) Officer at the U.S. Centers for Disease Control and Prevention said that he believes these tests are encouraging. "The flexibility of the 3F technology allows us to rethink our strategy in the fight against the transmission of disease via mosquito," he said.

About 3F Technology

The desire to lower the number of mosquito-borne diseases around the world led GRDG to study orchids from around the world before concentrating on the Florida Everglades and the elusive ghost orchid, which produced a chemical that inhibited the mosquito's ability to find them. The GRDG team was able to identify and, eventually, reproduce those chemical compounds.

"These test results are the product of a creative process that focuses on real-world problems and provides safe, real-world solutions," said Frank Heuszel, President of Impact Biomedical, Inc. "We will continue to make unique products from botanical sources that serve consumers in their everyday lives."

In June 2021, Impact Biomedical and GRDG announced it had received a U.S. Patent for 3FDB (US 10,966,424), a Functional Fragrance Formulation, that increases the effectiveness of current mosquito repellants through a light and delightfully fragrant compound derived from botanical oils.

Thomas Meyer, Vice President, Innovation & Sustainability at Chemia Corporation, the fragrance company that has exclusively partnered with GRDG to formulate 3F-Fragrances, believes this will change the personal care market. "Major brands will integrate this technology into everyday products," he said.

About Impact BioMedical, Inc.

Impact BioMedical, Inc. ("Impact BioMedical") is a wholly owned subsidiary of DSS and a unique technology source, developer, and business partner in addressing unmet needs in human healthcare and wellness. For more information on Impact BioMedical visit <http://impbio.com/>.

About Document Security Systems, Inc.

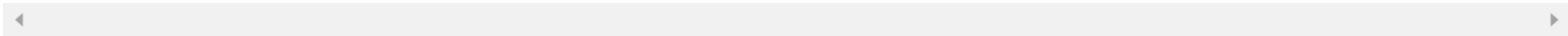
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For more information on DSS visit <http://www.dsssecure.com>.

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