

Pressure BioSciences UST Platform Successfully Transforms Neem Oil into a Novel, Highly Potent Nanoemulsion for More Effective Agrochemical Applications

Nanoemulsified Neem Oil Droplets Were Designed to Provide Stable, Water-Miscible Concentrates of this Natural, Environmentally Safe Pesticide for Improved Wholesale and Retail Use

SOUTH EASTON, MA / ACCESSWIRE / September 30, 2021 /Pressure BioSciences, Inc. (OTCQB:PBIO) ("PBI" or the "Company"), a leader in the development and sale of broadly enabling, pressure-based instruments, consumables, and platform technology solutions to the worldwide biotechnology, biotherapeutics, cosmeceuticals, nutraceuticals, and food & beverage industries, today announced the successful application of its Ultra Shear Technology™ ("UST™") platform for the development of safe, natural, and environmentally friendly pesticides for the mitigation of agricultural losses and decreased spread of disease by insects. Specifically, the Company reports the use of its novel UST platform for the production of highly-effective, stable, high-quality neem oil nanoemulsions. Unlike many neem oil-based products available today, which rapidly separate when mixed with water, UST-produced nanoemulsions remain suspended in water for months, while having a protective effect on the active ingredients that would normally rapidly deteriorate in water.

Nearly half of the world's population lives in regions where malaria is [endemic](#). In 2019, the World Health Organization (WHO) reported 229 million cases of malaria [worldwide](#). Neem oil is widely used for its repellent and larvicidal activities on the mosquito vectors that carry [malaria](#).

It is estimated that invasive insect damage costs a minimum of \$70 billion per year [globally](#). The U.S. Environmental Protection Agency (EPA) has approved neem oil as a safe and natural [pesticide](#) and the U.S Department of Agriculture (USDA) has approved its use on organic food [crops](#). Azadirachtin, the primary insecticidal component of neem oil, is rapidly degraded by light, water, and soil microbes. However, preservation of insecticidal activity has been shown when neem oil is formulated as a [nanoemulsion](#). Improved bioefficacy has also correlated with the smaller oil droplet [size](#) of neem oil nanoemulsions.

Mr. Greg St. Clair has extensive experience in both the business and science areas of agriculture. He has been a research agronomist, a managing director and division head of a \$1B+ agriculture retailer, and is currently a VP at Palindromes, Inc. - a producer of non-GMO organic food-grade soybeans.

Mr. St. Clair commented: "The main goal of any insecticide is to achieve a consistent dose when applying the product to control the targeted pest. Neem oil is a very effective and safe,

broad-spectrum, multi-purpose insecticide. Its main drawback is its inconsistency of control. The product needs to be shaken or agitated frequently, which could account for its inconsistent results. In my opinion, current microemulsion formulations of neem and other essential oils make it difficult - if not impossible - to control dosing. To the contrary, it appears that nanoemulsified formulations will provide more consistent and controlled application rates, while reducing the amount of product needed per application as well as lowering the cost to both the manufacturer and consumer. This benefit would be true for not just neem oil, but for other oil-based pesticides and fertilizers as well."

Mr. Gary B. Smejkal, Senior Research Scientist at PBI, said: "When stored at room temperature, insecticidal potency of our UST-produced neem oil nanoemulsions was well preserved. Using a copepod model system, a 50% kill rate was observed in less than two hours following storage of the neem oil nanoemulsion for four months."

Mr. Richard T. Schumacher, President & CEO of PBI, commented: "Discussions continue with prospective partners worldwide who are interested in using the UST platform in the production and commercialization of their oil-based products for a multitude of applications. In addition, we continue to explore opportunities where our UST platform can improve the effectiveness and competitiveness of our own products, such as the organic, eco-friendly products we plan to sell through our new, wholly-owned subsidiary PBI Agrochem. This includes our internally-developed neem oil extract (\$2.04 billion market by [2022](#)). Such products offer the tantalizing opportunity for commercialization into both wholesale and retail marketplaces, which we are actively considering for PBI Agrochem."

Mr. Schumacher summarized the multitude of opportunities now available to the Company: "We look forward to our innovative UST technology platform being well received globally by major players in myriad industries who will be able to profit from its application, and to the increase in our own business prospects that we believe will quickly follow."

About Pressure BioSciences, Inc.

Pressure BioSciences, Inc. (OTCQB:PBIO) is a leader in the development and sale of innovative, broadly enabling, pressure-based solutions for the worldwide life sciences and other industries. Our products are based on the unique properties of both constant (i.e., static) and alternating (i.e., pressure cycling technology, or PCT) hydrostatic pressure. PCT is a patented enabling technology platform that uses alternating cycles of hydrostatic pressure between ambient and ultra-high levels to control bio-molecular interactions safely and reproducibly (e.g., cell lysis, biomolecule extraction). Our primary focus is the development of PCT-based products for biomarker and target discovery, drug design and development, biotherapeutics characterization and quality control, soil & plant biology, forensics, and counter-bioterror applications. Additionally, major new market opportunities have emerged in the use of our pressure-based technologies in the following areas: (1) the use of our recently acquired, patented technology from BaroFold, Inc. (the "BaroFold" technology) to allow entry into the bio-pharma contract services sector, and (2) the use of our recently-patented, scalable, high-efficiency, pressure-based Ultra Shear Technology ("UST") platform to (i) create stable nanoemulsions of otherwise immiscible fluids (e.g., oils and water) and to (ii) prepare higher quality, homogenized, extended shelf-life or room temperature stable low-acid liquid foods that cannot be effectively preserved using existing non-thermal technologies.

Forward Looking Statements

This press release contains forward-looking statements. These statements relate to future events or our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our or our industry's actual results, levels of activity, performance, or achievements to be materially different from any future results, levels of activity, performance or achievements expressed, implied, or inferred by these forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "should," "could," "would," "expects," "plans," "intends," "anticipates," "believes," "estimates," "predicts," "projects," "potential" or "continue" or the negative of such terms and other comparable terminology. These statements are only predictions based on our current expectations and projections about future events. You should not place undue reliance on these statements. In evaluating these statements, you should specifically consider various factors. Actual events or results may differ materially. These and other factors may cause our actual results to differ materially from any forward-looking statement. These risks, uncertainties, and other factors include, but are not limited to, the risks and uncertainties discussed under the heading "Risk Factors" in the Company's Annual Report on Form 10-K for the year ended December 31, 2020, and other reports filed by the Company from time to time with the SEC. The Company undertakes no obligation to update any of the information included in this release, except as otherwise required by law.

For more information about PBI and this press release, please click on the following website link:

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