ZEN Graphene Solutions Announces Successful Testing of Its Graphene Compound Against Antimicrobial-Resistant Bacteria

written by Raj Shah | March 17, 2021

March 17, 2021 (Source) – **ZEN Graphene Solutions Ltd.** ("**ZEN**" or the "**Company**") (TSXV:ZEN) and (OTCPINK:ZENYF), a next-gen nanomaterials technology company, is pleased to announce successful testing results of its patent-pending graphene-based compound against four gram-positive and nine gram-negative bacteria with antimicrobial-resistance (AMR), including multidrug-resistant variants like methicillin-resistant staphylococcus aureus (MRSA). Testing was completed under the direction of Dr. Tony Mazzulli, MD, FRCPC, FACP, Microbiologist-in-Chief and Infectious Disease Specialist at University Health Network/Mount Sinai Hospital, following initial breakthrough results demonstrating that the compound is 99.9% effective against viruses, bacteria, and fungi. With the goal of targeting pathogens in humans, the results are even more significant considering the extremely low minimum inhibitory concentration (MIC) and the excellent safety profile established during Nucro-Technics' seven-day repeated dose study reported in early March.

Dr. Mazzulli, MD, commented: "The test results indicate that ZEN's Graphene Compound (GC) at very low concentrations is capable of inhibiting a variety of gram-positive and gram-negative antimicrobial-resistant (AMR) aerobic bacteria. These pathogens are associated with a number of difficult-to-treat

clinical infections including those involving the respiratory tract, urinary tract, skin and soft tissues, and bacteremia. Based on a previous evaluation of this GC against fully susceptible organisms (i.e., *E. coli, S. aureus, Streptococcus pneumoniae*), the MICs for the AMR strains were comparable, or only a single dilution higher."

"The relatively low concentrations of this GC required to achieve an antimicrobial effect is also promising. Although one cannot directly compare the MICs of different compounds to determine their relative efficacy, the extremely low concentrations that show an effect are well below the concentration required of commonly used antibiotics to show a similar effect. These GC concentrations are also in keeping with levels that were shown to have an antiviral effect."

"A novel approach to the use of this GC for treatment of common respiratory tract infections, while minimizing any potential toxicity, is to use it topically. This could have multiple applications, including the following: as an intranasal spray or mixed with normal saline to create a solution for use as a sinus rinse for the treatment of sinusitis and other common upper respiratory tract infections; as a puffer or inhaler for the treatment of lower respiratory tract infections such as pneumonia; or, as an ophthalmic solution for the treatment of conjunctivitis or pre-op preparation for ophthalmic surgery. Given its activity against *Pseudomonas aeruginosa* and *S. aureus*, it may also play a role as a topical otic solution for the treatment of *Otitis Externa* infections, commonly caused by these organisms. This would maximize local concentrations directly at the site of infection and avoid having to administer it systemically (orally or parenterally)."

Greg Fenton, ZEN CEO, commented: "The World Health Organization (WHO) lists AMR as a top 10 global public health threat facing

humanity, largely due to the misuse and overuse of antimicrobials. With significant human impact and additional global healthcare expenditures expected to reach US$1.2 trillion annually by 2050 due to AMR, it is clear why the WHO, numerous AMR-focused organizations, and some of the world's largest and most innovative companies are allocating substantial resources to this cause. To address this global threat, we believe novel, broad-spectrum and antimicrobial agents are needed, and we are demonstrating that nanotechnology and our graphene-based compound can potentially play a key role."

"ZEN is excited to be developing a graphene-based solution that has the potential to safely treat more common human-contracted pathogens, and also play a key role in the fight against this growing global health threat. Further, the potential use of this novel treatment to combat AMR can reduce antibiotic usage globally, reducing negative impacts on the environment and slowing the development of new resistant pathogens."

"Due to the importance of this development in addressing AMR, the SARS-CoV-2 virus and its variants, we will continue discussions with various groups and look forward to partnering with new organizations to bring a potential game-changing therapeutic to market as quickly as possible."

Highlights

- Graphene Compound is 99.9% effective against all four gram-positive, and nine gram-negative aerobic antimicrobial-resistant bacteria tested so far, including both types of MRSA
- Extremely low MIC, below 1 µg/ml for all of the AMR bacteria tested
- ZEN has filed patents on multiple uses of this graphene compound, building on previous filings

- ZEN is consulting with multiple groups and regulatory agencies on how to fast track this technology given its potential to help address AMR and the SARS-CoV-2 virus and its variants
- Based on the safety demonstrated during Nucro-Technics' seven-day repeat dose cytotoxicity results, the company is now considering various Good Laboratory Practice (GLP) studies to demonstrate safety based on a potential therapeutic use

Antimicrobial Resistance

AMR continues to rise in the population resulting in limited options for the treatment of many infectious diseases. In fact, AMR is a global threat that kills approximately 700,000 people each year, and the WHO estimates that by the year 2050, the leading cause of death will be infection due to multi-drug resistant bacteria.

Many factors are driving AMR, including the overuse and misuse of antibiotics. Of the many approaches to deal with AMR is developing novel compounds with unique mechanisms of action capable of overcoming current resistance mechanisms. Graphene Oxide is a compound with an inherent antimicrobial activity, and when combined with other antimicrobial nanoparticles as ZEN's current patent pending GC, ZEN and Dr. Mazzulli are demonstrating that a powerful synergistic effect can be achieved that dramatically enhances its efficacy at extremely low MICs.

Several funding agencies have been established to help fund promising AMR research. Based on the potency and safety profile of our compound against AMR bacteria, ZEN has begun discussions with these and other entities regarding the development of this promising therapeutic.

About ZEN Graphene Solutions Ltd.

ZEN is a next-gen nanomaterials technology company developing graphene-based technologies that help protect people and the environment. ZEN is currently focused on commercializing a patent pending graphene-based coating with 99% biocidal activity, including against COVID-19, and the potential to use similar graphene compounds as pharmaceutical products against infectious diseases. The company has a significant R&D pipeline with an interest in monomers, polymers, metal alloys, corrosion coatings, biosensors, along with the production of graphene oxide and graphene quantum dots. Additionally, the company owns the unique Albany Graphite Project which provides the company with a potential competitive advantage in the graphene market. Labs in Japan, UK, Israel, USA, and Canada have independently demonstrated that ZEN's Albany Pure™ Graphite is an ideal precursor material that easily converts (exfoliates) to graphene, using a variety of mechanical, chemical, and electrochemical methods.

For further information:

Greg Fenton, Chief Executive Officer
Tel: 1(437) 220-8140
Email: Gfenton@zengraphene.com

To find out more about ZEN Graphene Solutions Ltd., please visit our website at www.ZENGraphene.com. A copy of this news release and all material documents in respect of the Company may be obtained on ZEN's SEDAR profile at www.sedar.ca.

Disclaimer

The company is not making any express or implied claims that its product has the ability to eliminate, cure or contain COVID-19 at this time.

Forward-Looking Statements

This news release contains forward-looking statements. Since forward-looking statements address future events and conditions, by their very nature they involve inherent risks and uncertainties. Although ZEN believes that the assumptions and factors used in preparing the forward-looking information in this news release are reasonable, undue reliance should not be placed on such information, which only applies as of the date of this news release, and no assurance can be given that such events will occur in the disclosed time frames or at all. ZEN disclaims any intention or obligation to update or revise any forward-looking information, whether as a result of new information, future events or otherwise, other than as required by law. Neither the TSX Venture Exchange nor its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this release.

SOURCE: ZEN Graphene Solutions Ltd.