NEWS RELEASE

TFF Pharmaceuticals' Technology Generates Superior Inhalational Dry Powder Formulations for Pulmonary Drug Delivery

2024-09-26

Newly published data in the Journal of Drug Delivery Science and Technology demonstrate more uniform drug distribution in the lung compared with other technologies

FORT WORTH, Texas, Sept. 26, 2024 (GLOBE NEWSWIRE) -- TFF Pharmaceuticals, Inc (Nasdaq: TFFP) (the "Company" or "TFF Pharmaceuticals"), a clinical-stage biopharmaceutical company focused on developing and commercializing innovative drug products based on its patented Thin Film Freezing (TFF) technology platform, announces positive preclinical data published in the Journal of Drug Delivery Science and Technology further validating the Company's TFF technology as superior approach to formulate dry powders for pulmonary drug delivery. The study demonstrates the superiority of TFF inhalational dry powders over jet-milling and spray-drying technologies in a rat model, with enhanced uniform drug distribution in the lungs, lower airway-to-lung distribution ratio, and rapid disaggregation of particles of the TFF powder and subsequent particle movement of the resulting TFF nanoaggregates.

In the newly **published study**, voriconazole dry powder formulations for inhalation were prepared by three different methods: jet-milling, spray-drying, and Thin Film Freezing. The TFF processed voriconazole dry powder, consisting of brittle, easily shearable nanoaggregates, exhibited the most homogeneous distribution in lung tissue, with the lowest airway-to-lung voriconazole deposition ratio (1.27), followed by spray-dried (1.76) and jet-milled (2.73) powders. This enhanced distribution is attributed to the smaller particle size after disaggregation and rapid movement of particles on the liquid surface. The results suggest that TFF inhalational dry powders may enhance treatment efficiency and reduce toxicity for lung diseases, further supporting Thin Film Freezing as a promising technology to formulate dry powders for pulmonary drug delivery. "This is our first head-to-head comparison of TFF

powder to powders made by other technologies, administered by inhalation to animals and characterized using mass spectrometry imaging to assess lung drug distribution. We are extremely pleased to confirm our hypothesis that Thin Film Freezing technology leads to the most homogeneous distribution of the drug in the lung," said Dr. Robert O. Williams III, Co-inventor of TFF technology and Professor at The University of Texas at Austin College of Pharmacy.

"These data, which examine formulations of voriconazole manufactured using different particle engineering technologies, suggest that the TFF dry powder technology for inhalation provides clear advantages over jet-milling and spray-drying methods," said Dr. Harlan Weisman, TFF Pharmaceuticals Chief Executive Officer. "It is gratifying to have the continued support of the scientific community for our approach, and to have ongoing validation of our science. The more rapid and uniform distribution of TFF generated dry powders in the lung with their lower airway to lung deposition ratio differentiate our inhalational products from products generated by other technologies and provide the opportunity to increase efficacy and lower risk of toxicities."

ABOUT TFF PHARMACEUTICALS' THIN FILM FREEZING (TFF) TECHNOLOGY

TFF Pharmaceuticals' proprietary Thin Film Freezing (TFF) technology allows for the transformation of both existing compounds and new chemical entities into dry powder formulations exhibiting unique characteristics and benefits. The TFF process is a particle engineering process designed to generate dry powder particles with advantageous properties for inhalation, as well as parenteral, nasal, oral, topical and ocular routes of administration. The process can be used to engineer powders for direct delivery to the site of need, circumventing challenges of systemic administration and leading to improved bioavailability, faster onset of action, and improved safety and efficacy. The ability to deliver therapies directly to the target organ, such as the lung, allows TFF powders to be administered at lower doses compared to oral drugs, reducing unwanted toxicities and side effects. Laboratory data suggest the aerodynamic properties of the powders created by TFF can deliver as much as 75% of the dose to the deep lung. TFF does not introduce heat, shear stress, or other forces that can damage more complex therapeutic components, such as fragile biologics, and instead enables the reformulation of these materials into easily stored and temperature-stable dry powders, making therapeutics and vaccines more accessible for distribution worldwide. The advantages of TFF can be used to enhance traditional delivery or combined to enable next-generation pharmaceutical products.

ABOUT TFF PHARMACEUTICALS

TFF Pharmaceuticals, Inc. is a clinical-stage biopharmaceutical company engaging patented rapid freezing technology to develop and transform medicines into potent dry powder formulations for better efficacy, safety, and stability. The company's versatile TFF technology platform has broad applicability to convert most any drug, including vaccines, small and large molecules, and biologics, into an elegant dry powder highly advantageous for

inhalation, or for topical delivery to the eyes, nose and the skin.

SAFE HARBOR

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements in this press release include, but are not limited to, statements by the Company relating to the expected benefits of its patented TFF technology platform over jet-milling and spray-drying methods,. Forward-looking statements involve known and unknown risks, uncertainties and other factors that could cause actual results to differ materially, including (i) the risk that further testing may not be consistent with the data to date demonstrating the superiority of the TFF technology platform over jet-milling and spray-drying methods, (ii) the risk that the Company may not be able to obtain additional working capital with which to continue its current operations and clinical trials as and when needed, (iii) success in early phases of pre-clinical and clinical trials do not ensure later clinical trials will be successful; (iv) no drug product incorporating the TFF platform has received FDA pre-market approval or otherwise been incorporated into a commercial drug product, (v) the Company has no current agreements or understandings with any large pharmaceutical companies for the development of a drug product incorporating the TFF Platform, and (vi) those other risks disclosed in the section “Risk Factors” included in the Company’s Quarterly Report on Form 10-Q filed with the SEC on August 14, 2024.. The Company cautions readers not to place undue reliance on any forward-looking statements. The Company does not undertake and specifically disclaims any obligation to update or revise such statements to reflect new circumstances or unanticipated events as they occur, except as required by law.

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Source: TFF Pharmaceuticals, Inc.