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## **Allegra Therapeutics Announces Positive Top-Line Results for Phase 3 ALLIUM Clinical Trial of EXBLIFEP® for Complicated Urinary Tract Infections**

- EXBLIFEP demonstrated superiority in the primary endpoint of clinical cure and microbiological eradication at test-of-cure over piperacillin-tazobactam
- EXBLIFEP safety profile was comparable to piperacillin-tazobactam

**Saint-Louis, France and Weil am Rhein, Germany, February 25, 2020** - Allegra Therapeutics today announced that its investigational product EXBLIFEP (cefepime-enmetazobactam) met the U.S. Food and Drug Administration (FDA) and European Medicines Agency (EMA) pre-specified primary endpoint in the Phase 3 ALLIUM clinical trial in patients with complicated urinary tract infections (cUTI), including acute pyelonephritis (AP). In addition, EXBLIFEP demonstrated superiority over piperacillin-tazobactam.

Overall success was 79.1% for EXBLIFEP vs. 58.9% for piperacillin-tazobactam (adjusted stratified difference, 21.2% [95% stratified Newcombe CI, 14.3% to 27.9%]). Treatment discontinuations were seen at comparable levels in 5.2% and 4.0% in EXBLIFEP and piperacillin-tazobactam respectively. EXBLIFEP was well tolerated with 4.3% of patients reporting serious adverse events vs. 3.7 % with piperacillin-tazobactam (0.2% vs. 0.6% assessed as drug related), suggesting comparable safety profile to piperacillin-tazobactam.

Keith Kaye M.D., MPH, Professor of Medicine and Director of Research for Infectious Diseases at University of Michigan said, "Infections from ESBL-producing Enterobacteriaceae have increased in the US since 2000 and now also cause infection in the community. According to most recent U.S. Centre for Disease Control and Prevention (CDC) data 197'400 cases of ESBL-producing Enterobacteriaceae occur every year with 9'100 associated deaths. The use of piperacillin-tazobactam for the treatment of such infections has been controversial, and the development of new treatments for these infections has been classified as a critical priority by the World Health Organization (WHO). Cefepime-enmetazobactam combination may provide a novel therapeutic option addressing this serious threat."

"The superiority demonstrated in the primary endpoint, at test of cure, combined with a comparable safety profile to that of well tolerated and widely used piperacillin-tazobactam support the potential use of cefepime-enmetazobactam as a new empiric and carbapenem-sparing treatment for multi-drug resistant Gram-negative infections." said Patrick Velicitat M.D., Chief Medical Officer of Allegra Therapeutics.



FINAL DRAFT

**About ALLIUM Trial design.** The ALLIUM trial compared 1034 randomized patients receiving either cefepime 2 g/ enmetazobactam 0.5 g or piperacillin 4 g/ tazobactam 0.5 g every 8 h as 2 h continuous intravenous infusion in a multi-centre, randomized, controlled, double-blind, global study in 112 sites within 19 countries. The primary efficacy endpoint was defined as the composite success outcome of clinical cure (symptoms resolution) and microbiological eradication ( $< 10^3$  CFU/mL in urine culture) at the test-of-cure visit. The primary efficacy evaluation was performed in the microbiological Modified Intent-to-Treat Population (m-MITT) including patients infected with a Gram-negative pathogen deemed non-resistant to cefepime-enmetazobactam (MIC  $\leq$  8 mg/L) and piperacillin-tazobactam (MIC  $\leq$  64 mg/L). There was a prespecified 10% noninferiority margin with superiority to be tested in the event of confirmed noninferiority. Differences in treatment effects were assessed using two-sided, 95% stratified Newcombe confidence intervals.

**About EXBLIFEP®** EXBLIFEP is a combination of enmetazobactam, a novel extended-spectrum  $\beta$ -lactamase inhibitor belonging to the penicillanic acid sulfone class, with the 4<sup>th</sup> generation cephalosporin cefepime.

EXBLIFEP has been granted Qualified Infectious Disease Product and Fast Track Designation by the US Food and Drug Administration (FDA) which will provide five years additional market exclusivity and priority FDA review.

The European Medicines Agency (EMA) have indicated that due to combination with already approved cefepime and in light of the Epithelial Lining Fluid penetration study results obtained with cefepime-enmetazobactam combination, Allecra Therapeutics is allowed to seek approval of EXBLIFEP for use in pneumonia, including HAP/VAP without conducting a Phase 3 study in the pneumonia indication.

**About Complicated Urinary Tract Infections.** There are approximately 3.6 million patients with cUTIs in the U.S requiring antibiotic therapy. cUTIs, including acute pyelonephritis, are defined as urinary tract infections ascending from the bladder accompanied by local and systemic signs and symptoms, including fever, chills, malaise, flank pain, back pain, and/or costo-vertebral angle pain or tenderness, that occur in the presence of a functional or anatomical abnormality of the urinary tract or in the presence of catheterization, with treatment typically initiated by IV therapy in a hospital setting.

**About Acute Pyelonephritis.** AP is a bacterial infection causing inflammation of the kidneys and is one of the most common diseases of the kidney. Pyelonephritis occurs as a complication of an ascending urinary tract infection (UTI) which spreads from the bladder to the kidneys and their collecting systems. Acute pyelonephritis in the United States is found at a rate of 15 to 17 cases per 10,000 females and 3 to 4 cases per 10,000 males annually.

**About Hospital Acquired Pneumonia.** HAP is the second most common nosocomial infection (after urinary tract infections) and accounts for 15–20% of the total. It is the most common cause of death among nosocomial infections and is the primary cause of death in intensive care units. HAP typically can lengthen a hospital stay by 1–2 weeks.



FINAL DRAFT

**About Allegra Therapeutics.** Allegra Therapeutics, established in 2013, is a clinical-stage biopharmaceutical company contributing towards the global effort to combat antibiotic resistance by developing new therapeutic modalities to overcome emergent resistance mechanisms, thereby saving lives of patients whose infections may otherwise be treated inadequately.

Allegra is supported by Forbion, Andera Partners, Delos Capital, Xeraya Capital, EMBL Ventures, and BioMed Partners. Allegra's wholly owned French subsidiary is a beneficiary of financial support from the French public bank Bpifrance and from the Région Alsace.

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