

PRESS RELEASE

Cystic fibrosis – liposomal tobramycin receives second orphan drug designation within weeks

Pre-clinical data indicate unique microbiological profile for established antibiotic

Zurich, 16 July 2009. An innovative treatment for infections of the respiratory tract in cystic fibrosis patients has received a second orphan drug designation in the US only weeks after a first designation was granted. The recent designation relates to Burkholderia cepacia pathogens that can cause lethal infections in cystic fibrosis patients. For Axentis Pharma AG of Zurich, Switzerland, both designations affirm the therapeutic potential of its product candidate Fluidosomes™-tobramycin, whose unique microbiological profile sets it apart from other antibiotic formulations (including free tobramycin).

Axentis Pharma (Switzerland) announced today that the Office of Orphan Products Development of the US Food and Drug Administration (FDA) has granted a second orphan drug designation to its lead product candidate Fluidosomes™-tobramycin. This drug is a liposomal formulation of tobramycin and an innovative treatment for infections of the respiratory tract in patients with cystic fibrosis. Only three months ago, the FDA granted Fluidosomes™-tobramycin orphan drug designation for the treatment of pulmonary infections caused by Pseudomonas aeruginosa. The newly granted second designation relates to pulmonary infections caused by Burkholderia cepacia (B. cepacia) pathogens.

Despite stringent infection control practices, B. cepacia infections still occur in cystic fibrosis patients and can lead to fatal sepsis. The cell envelopes of these especially virulent bacteria are impermeable to most antibiotics, which makes them particularly difficult to treat. Due to its unique mode of action, which allows the antibiotics to penetrate into the bacteria, Fluidosomes™-tobramycin could become a particularly effective treatment for B. cepacia infections.

Prof. Dr. Miguel A Valvano, MD, Medical Advisor to Axentis Pharma, comments on the development: "Burkholderia cepacia is almost always multi-resistant to antibiotics and this, in conjunction with the poor prognosis of patients with B. cepacia infection, makes the

treatment of these patients exceedingly complex. Tobramycin is in principle an effective antibiotic. The drug is however rather ineffective due to the impermeability of *B. cepacia*'s cell envelope. In addition, *B. cepacia* - just like many other pathogens - has developed mechanisms to eliminate antibiotics once they have entered the cell. Fluidosomes™-tobramycin seems to overcome these limitations by packing tobramycin into liposomes, which, by allowing effective penetration of the antibiotic into the bacterial cell, completely changes the microbiological profile of this antibiotic. Hence, Fluidosomes™-tobramycin could be a totally new antibiotic formulation that addresses microbiological needs that no other antibiotic can".

What exactly happens when Fluidosomes™-tobramycin encounters the bacterium is still not entirely clear, but pre-clinical data indicate a novel mode of action. Dr. Helmut Brunar, CEO of Axentis Pharma explains: "Once at the site of infection, tobramycin-containing liposomes seem to fuse with the cell membrane of the pathogen. In this way, the entire load of tobramycin contained in the Fluidosomes™ is released into the bacterial cell. Additionally, our data indicate that bacterial rescue mechanisms that pump tobramycin out of the cell are inhibited by the fusion process. The efficient delivery and maximum release of tobramycin into the bacterial cell together with inhibition of the clearance mechanism indicate that Fluidosomes™-tobramycin has a highly efficient therapeutic effect."

About Axentis Pharma AG (www.axentispharma.com)

Axentis Pharma is a respiratory specialty pharmaceutical company whose core competence is the combination of a fully patented, liposome-based drug delivery system with already established and well-characterized therapeutic agents. The company is using its platform delivery technology, named Fluidosomes™ technology, for the development of its lead product, an inhalable liposomal formulation of tobramycin. Axentis Pharma's lead product is designed to treat bacterial infections in the lungs.

About Fluidosomes™ technology

Axentis Pharma's Fluidosomes™ technology uses biocompatible lipids endogenous to the lung that are formulated into small liposomes. This nanocapsule platform offers wide-ranging potential for unmet medical needs, including chronic respiratory infections of the lung. In the case of Fluidosomes™-tobramycin, the interaction between tobramycin and the microbial cell is triggered when the liposomes undergo a fusion process with the outer membrane of the bacterial cell wall. Tobramycin then penetrates into the inner cell compartment and triggers bacterial cell death.

For further information, please contact:

Dr. Helmut Brunar, Ph.D., CEO
Axentis Pharma AG
Limmatquai 138
8001 Zurich, Switzerland
+41 44 202 7878
board@axentispharma.com
www.axentispharma.com