Collegium Pharmaceutical Announces Positive Topline Results of Clinical Study Evaluating the Effect of Crushing Oxycodone DETERx® Compared with OxyContin®

April 2, 2014 1:41 PM ET

Oxycodone DETERx® exhibited superior crush resistance

Canton, MA – April 2, 2014 – Collegium Pharmaceutical, Inc., a specialty pharmaceutical company focused on the development of innovative treatments for chronic pain, today announced positive topline results from a clinical study evaluating the effect of physical manipulation by crushing on Oxycodone DETERx®, it's extended-release (ER), abuse-deterrent, oxycodone microsphere-in-capsule product, compared with reformulated OxyContin® (OxyContin). Oxycodone DETERx® utilizes Collegium's DETERx® technology platform; it is designed to be more resistant to tampering and abuse than traditional formulations of the drug and is currently in Phase 3 clinical development. The product's abuse-deterrent characteristics are being evaluated in laboratory and clinical studies, consistent with the 2013 FDA Draft Guidance "Abuse-Deterrent Opioids - Evaluation and Labeling."

The objective of the recently completed study was to assess the safety and pharmacokinetics of Oxycodone DETERx® when the capsule was taken intact after oral administration compared with opening the capsule and crushing the capsule contents (microspheres) prior to oral administration. These treatments were compared with OxyContin® intact, OxyContin® crushed, and an immediate-release (IR) oxycodone tablet formulation crushed in naltrexone-blocked, healthy subjects (n=42). The study was an open label, randomized, active-controlled, 5 treatment, 5 period, cross-over comparison design. The selected crushing techniques were previously identified in the laboratory as the most effective method of reducing the particle size for each respective product. These crushing methods are also commonly employed by abusers to destroy the time-release mechanism of extended-release opioid formulations to make the drug more abusable.

The top-line results of the study demonstrated the following:

- Crushed Oxycodone DETERx® capsule contents (microspheres) (C_{max} = 62.9 ng/mL) were bioequivalent based upon C_{max} and AUC to intact Oxycodone DETERx® capsules) (C_{max} = 67.5 ng/mL) with similar T_{max} demonstrating that crushing the contents of Oxycodone DETERx® capsules did not alter the pharmacokinetics.
- Crushed OxyContin® tablets (C_{max} = 78.4 ng/mL) were bioequivalent based upon C_{max} and AUC to crushed IR tablets (C_{max} = 79.4 ng/mL), demonstrating that crushing OxyContin® compromised the integrity of the time-release formulation, transforming the drug-release profile from an ER profile to an IR profile.
- At one hour after dosing, crushed OxyContin® resulted in an approximately 7 times higher mean plasma concentration than taking OxyContin intact and an approximately 4 times higher mean plasma concentration than crushed Oxycodone DETERx®.
- The mean Abuse Quotient ("AQ" = C_{max}/T_{max}) was calculated for all treatment arms. The mean AQ value for crushed Oxycodone DETERx® was lower than that of Oxycodone DETERx® intact. The AQ for crushed OxyContin® was approximately 4 times higher than the AQ value for OxyContin® intact and similar to the crushed oxycodone IR tablets.

"The study demonstrated that Oxycodone DETERx® preserved its ER properties after being subject to crushing followed by oral administration, whereas the active comparator did not retain its ER properties. This suggests that even formulations thought to have abuse-deterrent properties may differ in the extent to which they resist common forms of abuse," said Dr. Nathaniel Katz, President of Analgesic Solutions and Former Chair of the Advisory Committee, Anesthesia, Critical Care, and Addiction Products Division, FDA.

"The results of this study are consistent with our prior clinical study results for Oxycodone DETERx®. We intend to

publish these data in a peer-reviewed medical journal in the comings months," said Michael Heffernan, CEO of Collegium. "We recently completed enrollment in our Phase 3 development program and remain on track to file our NDA in Q4 2014."

About DETERx® Technology

The DETERx® drug delivery platform consists of a microsphere-in-capsule formulation. While developed primarily to provide abuse-deterrent properties to protect against common methods of tampering such as chewing, crushing, insufflation and extraction for IV injection, the multi-particulate design is expected to enable patients with difficulty swallowing to open the capsule and to administer the contents sprinkled onto food, directly into the mouth, or via a feeding tube, while maintaining the ER properties of the product. The DETERx® technology can be used with drugs that are commonly abused such as opioids and amphetamines, as well as drugs that have narrow therapeutic windows that would benefit from protection against misuse such as breaking, crushing, grinding, or dissolving the product. The formulation platform is covered by U.S. and international patents and patent applications. Oxycodone DETERx® is the first of a number of product candidates using the DETERx® platform.

About Collegium Pharmaceutical, Inc.

Collegium Pharmaceutical, Inc. is a specialty pharmaceutical company focused on developing a portfolio of products that incorporate its patent-protected DETERx® formulation platform for the treatment of chronic pain. The DETERx®oral drug delivery technology provides ER delivery, unique abuse-deterrent properties, and flexible dose administration options. For more information, visit the Company's website at www.collegiumpharma.com.