Lipocine Announces Successful Phase 1 Results With LPCN 1107, Potentially the First Oral Product for the Prevention of Preterm Birth

Significant absorption upon oral dosing of LPCN 1107
Good dose response demonstrated
LPCN 1107 oral steady state 400mg BID exposure is about 55% of weekly 250mg IM product

SALT LAKE CITY, May 15, 2014 (GLOBE NEWSWIRE) --Lipocine Inc. (Nasdaq:LPCN), a specialty pharmaceutical company, today announced the successful completion of a Phase 1 study of LPCN 1107, the company's oral hydroxyprogesterone caproate (HPC) product candidate. The study was designed to determine the pharmacokinetics and bioavailability of LPCN 1107 relative to an intramuscular (IM) HPC, as well as safety and tolerability, in healthy non-pregnant female volunteers.

"We are pleased with the results of this study, as it confirms our pre-clinical data by achieving meaningful drug levels after oral administration of this highly insoluble drug," said Dr. Mahesh Patel, President, CEO and Chairman of Lipocine Inc. "To our knowledge no significant oral bioavailablity has ever been reported for this established drug. Hydroxyprogesterone caproate is the only drug approved for prevention of recurrent preterm birth, a leading cause of peri-natal mortality and morbidity worldwide, but it is currently only available in an inconvenient injectable form. We believe that an oral alternative will be a major contribution to patient care and we are encouraged that LPCN 1107 has the potential to become the first oral product for prevention of preterm birth."

In this Phase 1, pilot, open-label study, ten healthy non-pregnant female subjects of child bearing age received in a randomized cross-over fashion either one single dose of 400 mg of LPCN 1107 or two doses of 400 mg LPCN 1107 administered 12 hours apart, followed by a single dose of 250 mg IM HPC, with a one week washout period between each treatment. Blood samples were collected over 24 hours following the 400 mg QD dose, over 36 hours following the 400 mg BID dose and over 30 days following the IM dose. Plasma samples were assayed for HPC concentration by a validated LC-MS/MS method. The maximum concentration (Cmax) and area under the curve (AUC) for the oral treatments are shown in Table 1.

Table 1: Pharmacokinetic Parameters (geometric mean and associated ranges)

Dosing Regimen	C_{max} (ng/ml) [range]	AUC_{0-t} (ng.h/ml) [range]
400mg , BID (daily dose of 800mg)	23.1 [8.5 - 72.1]	173 [82 - 443]
400mg, QD	13.5 [4.9 - 54.4]	69 [33-207]

Significant absorption of HPC following oral administration was noted. Both mean Cmax and mean AUC increased significantly from the 400 mg QD to the 400 mg BID dose.

The steady state (week 5) pharmacokinetic parameters for the 400 mg BID and the approved label dose of 250 mg IM weekly injection for the prevention of recurrent preterm birth were simulated based on the single dose study data and the simulated Cmax and AUC are shown in Table 2.

Table 2: LPCN 1107 Steady State Pharmacokinetic Parameters

Products / Dosing Regimen	$C_{ss,max}$ (ng/ml) [range]	AUC_{SS-1} (ng.h/ml) [range]
LPCN 1107 400mg BID	23.9 [9.6 - 70.0]	1348 [673 - 3381]
Intramuscular injection, 250mg	17.8 [14.0 - 27.0]	2468 [1840 - 3180]

Based on this steady state simulation, LPCN 1107 could match the HPC exposure from the weekly IM injection at an appropriate oral dose. Based on these results, a study is planned to assess the pharmacokinetics and bioavailability of LPCN 1107 relative to IM in pregnant females to begin in the second half of 2014.

LPCN 1107 was well tolerated and the only significant treatment related adverse events observed was abnormal menstrual effects in both the LPCN 1107 and IM arms in some subjects which is not an unexpected progestogenic effect in non-pregnant females of child-bearing age.

About LPCN 1107

LPCN 1107 has the potential to become the first oral HPC product for the prevention of preterm birth in women with a prior history of at least one preterm birth. Potential benefits of our oral product candidate relative to current injectable products include the elimination of pain and site reactions associated with weekly injections, elimination of weekly doctor visits or visits

from the nurse, and elimination of interference/disruption of personal, family or professional activities associated with weekly visits. LPCN 1107 has completed PK studies in dogs showing oral exposure comparable to an intramuscular injection.

About Lipocine

Lipocine Inc. is a specialty pharmaceutical company developing innovative pharmaceutical products for use in men's and women's health using its proprietary drug delivery technologies. Lipocine's lead product candidate, LPCN 1021, currently in Phase 3 and is targeted to treat symptoms of low testosterone for men in need of testosterone replacement therapy. Additional pipeline candidates include LPCN 1111, a next generation oral testosterone therapy product, and LPCN 1107, which has the potential to become the first oral hydroxyprogesterone caproate product indicated for the prevention of recurrent preterm birth.

Forward-Looking Statements

This release contains "forward looking statements" that are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and includes statements that are not historical facts relating to expectations, clinical trials, the potential uses and benefits of Lipocine's product candidates, and product development efforts. Investors are cautioned that all such forward-looking statements involve risks and uncertainties, including, without limitation, the risks related to the receipt of regulatory approvals, the results of clinical trials, patient acceptance of Lipocine's products, the manufacturing and commercialization of Lipocine's products, and other risks detailed in Lipocine's filings with the U.S. Securities and Exchange Commission (the "SEC"), including, without limitation, its Form 10-K and other reports on Form 8-K, all of which can be obtained on the Company's website at www.lipocine.com or on the SEC website at www.sec.gov. Lipocine assumes no obligation to update or revise publicly any forward-looking statements contained in this release, except as required by law.
