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CTD Holdings Discusses its Phase I Clinical Trial for Intravenous Use of Trappsol® Cyclo™ in Niemann-Pick Disease Type C

ALACHUA, Fla., Aug. 30, 2018 (GLOBE NEWSWIRE) -- CTD Holdings, Inc. (OTCQB: CTDH), a clinical stage biotechnology company that develops cyclodextrin-based products for the treatment of disease with unmet medical need, responds today to community queries on the status of its Phase I clinical trial for Trappsol(R) Cyclo(TM) for Niemann Pick Disease Type C (NPC), a rare and fatal genetic disease.

“Since CTD’s participation at the NPC family conference convened by the National Niemann-Pick Disease Foundation earlier this month, we have received a number of queries from potentially interested participants in our Phase I trial based in the United States,” said N. Scott Fine, CTD’s Chairman and CEO. “To ensure that NPC patients and families have accurate information on our trial, we are pleased to discuss the trial parameters here.”

The Phase I trial is currently centered at UCSF Benioff Children’s Hospital Oakland with Caroline Hastings, MD as Principal Investigator. Dr. Hastings is the first physician in the United States to administer hydroxypropyl beta cyclodextrin (HPBCDs), in the form of CTD’s investigational Trappsol(R) Cyclo(TM), to NPC patients through expanded access. Expanded access permits certain patients with serious or life-threatening diseases or conditions to receive treatment with an investigational drug before it has been approved by the U.S. Food and Drug Administration (FDA). According to FDA, expanded access programs operate outside of the clinical trial setting, and may be appropriate when, amongst other factors, patient enrollment in a clinical trial is not possible. The FDA permitted expanded access in 2009 for intravenous administration of Trappsol(R) Cyclo(TM).

Benny Liu, MD, the physician-scientist who discovered that HPBCDs could extend lifespan and delay symptoms of NPC in a mouse model, is the Co-Principal Investigator of the Phase I trial at the Oakland site. CTD expects to bring a second site into this study in the near term. The official title of this trial is “A Phase I Study to Evaluate the Single and Multiple-Dose Pharmacokinetics of Intravenous Trappsol(R) Cyclo(TM) (HPBCD) in Patients with Niemann-Pick Disease Type C (NPC-1) and the Effects of Dosing Upon Biomarkers of NPC Disease.”

The Phase I interventional study is being conducted to find out whether Trappsol(R) Cyclo(TM), an experimental treatment for individuals with NPC-1 is safe at 2 different dose

levels and what effects it has on individuals who have this condition. Approximately 12 patients will be asked to take part in this research study for up to 20 weeks in total (including screening, treatment and follow-up). Patients who take part will receive either a dose of 1500 mg/kg Trappsol(R) Cyclo(TM) or 2500 mg/kg Trappsol(R) Cyclo(TM) treatment by an intravenous infusion every two weeks. The study will look at what the body does to the drug as well as what the drug does to the body by, for example, taking and examining blood and urine samples. Additionally, samples of cerebrospinal fluid (CSF) will be taken by lumbar puncture and assessed. Liver and skin biopsy specimens will be taken to assess filipin staining. Cholesterol metabolism will be investigated in liver samples and splenic and hepatic elasticity will be assessed by ultrasound. Patients will also have their hearing tested, be asked questions by their doctor, and complete questionnaires to help assess any changes in their condition during treatment. CTD Holdings supports all costs related to study participation for the participant and one caregiver.

Inclusion Criteria for the Phase I trial are:

- Confirmed diagnosis of NPC-1
- NIH NPC Severity Score <30 and with no more than 4 individual domains with a score ≥ 3.
- Age range: 18 years upwards
- At least one systemic manifestation of NPC disease defined as one or more of:
    - Clinically detectable hepatomegaly and/or either ALT or AST outside the normal range for the study laboratory
    - Clinically detectable splenomegaly
    - Impaired respiratory function due to NPC or a history of pneumonia in the last 12 months
- Negative urine pregnancy test for females of child bearing potential
- Written, informed consent

Exclusion Criteria for the Phase I trial are:

- The presence of NPC-2 mutations on exome gene sequencing
- Previous receipt of cyclodextrin therapy within 3 months of baseline
- Receipt of any of the following medications within 1 month of baseline: Coenzyme Q10, curcumin, cinnamon, fish oil supplements, high dose vitamin D (>500 milli-International unit (mIU)/day), acetyl leucine, or gingko biloba
- Concurrent treatment with any therapy indicated for the lowering of cholesterol such as statins, fibrates, ezetimibe
- Karnofsky score < 40
- Inability to comply with the proposed protocol assessments
- Concurrent medical conditions representing a contraindication to any of the study medications
- Grade 3 renal impairment or worse as indicated by eGFR<60mL/min/1.73m2
- Clinical evidence of acute liver disease including symptoms of jaundice or right upper quadrant pain or INR >1.8
- Involvement in another interventional clinical trial within the previous 6 months from baseline.

- Weight <40 kg or >100kg
- Male patients and female patients of childbearing potential who are not willing to use appropriate birth control (i.e., double barrier birth control) from enrollment until the follow-up visit

“Families have queried us in particular on the exclusion criteria regarding prior use of cyclodextrins and on prior participation in interventional clinical trials,” said Sharon Hrynkow, Ph.D., CTD’s Senior Vice President for Medical Affairs. “To be clear, if a patient has used another cyclodextrin product as a therapy, including in expanded access programs, but stops its use for any reason, three months later that patient could participate in baseline studies in our Phase 1 intravenous trial, provided that other eligibility criteria are met. With respect to other interventional trials, we are not able to consider patients who have participated in an interventional clinical trial for any indication, including NPC, within the 6 months prior to collection of baseline data in our Phase 1 intravenous trial.”

In February 2018, CTD filed with the Securities and Exchange Commission a[statement](#) that CTD had obtained preliminary data suggesting that Trappsol(R) Cyclo(TM) crosses the blood-brain-barrier in individuals suffering from NPC-1. Data were derived from initial subjects participating in CTD's phase I clinical trial, described here, as well as from a phase I/II clinical trial underway in in Europe and Israel ("A Phase I/II Study to Evaluate the Safety and PK of IV Trappsol(R) Cyclo(TM) (HPBCD) in Patients with Niemann-Pick Disease Type C NPC-1 and Pharmacodynamic Effects of Treatment Upon Markers of Cholesterol Metabolism and Clinical Outcomes," NCT02912793). Following intravenous administration of Trappsol(R) Cyclo(TM) to study subjects, it was detected in subjects' cerebrospinal fluid. The clinical significance of these findings will be determined as part of the final analysis of both clinical trials.

NPC patients and families wishing to learn more about our U.S. study are encouraged to contact CTD’s Family Liaisons or Caroline Hastings, MD:

Shannon Reedy - Shannon.Reedy@hotmail.com.
Jackie Imrie - jackie@jicltd.co.uk.
Caroline Hastings, MD - chastings@mail.cho.org.

Inquiries from physicians should be directed to: Dr. Hastings or Dr. Hrynkow. at sharon.hrynkow@cyclodex.com.

The main features of the Phase I trial are also described on ClinicalTrials.gov, NCT02939547.

About CTD Holdings:
CTD Holdings, Inc. is a clinical-stage biotechnology company that develops cyclodextrin-based products for the treatment of disease with unmet medical need. The company’s Trappsol(R) Cyclo(TM), an orphan drug designated product in the United States and Europe, is used to treat Niemann-Pick Disease Type C, a rare and fatal genetic disease, on a compassionate use basis as well as in two ongoing formal clinical trials (Clinical Trials.gov NCT02939547 and NCT02912793). Additional indications for the active ingredient in Trappsol(R) Cyclo(TM) are in development. For additional information, visit

the company's website: www.ctd-holdings.com

Safe Harbor Statement:
This press release contains "forward-looking statements" about the company's current expectations about future results, performance, prospects and opportunities. Statements that are not historical facts, such as "anticipates," "believes" and "expects" or similar expressions, are forward-looking statements. These statements are subject to a number of risks, uncertainties and other factors that could cause actual results in future periods to differ materially from what is expressed in, or implied by, these statements. The factors which may influence the company's future performance include the company's ability to obtain additional capital to expand operations as planned, success in achieving regulatory approval for clinical protocols, enrollment of adequate numbers of patients in clinical trials, unforeseen difficulties in showing efficacy of the company's biopharmaceutical products, success in attracting additional customers and profitable contracts, and regulatory risks associated with producing pharmaceutical grade and food products. These and other risk factors are described from time to time in the company's filings with the Securities and Exchange Commission, including, but not limited to, the company's reports on Forms 10-K and 10-Q. Unless required by law, the company assumes no obligation to update or revise any forward-looking statements as a result of new information or future events.

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