PharmaDrug Reports Positive Preclinical Study Results of Cepharanthine to Treat Cancers

Toronto, Ontario--(Newsfile Corp. - July 14, 2021) - PharmaDrug Inc. (CSE: BUZZ) (OTC Pink: LMLLF) ("**PharmaDrug**" or the "**Company**"), a specialty pharmaceutical company focused on the research, development and commercialization of controlled-substances and natural medicines such as psychedelics, cannabis and naturally-derived approved drugs, is pleased to announce interim positive results from its ongoing preclinical study evaluating the Company's patented enteric-coated formulation of Cepharanthine ("PD-001") in a broad panel of human cancers. The study is conducted by a respected contract research organization (CRO) with deep expertise in preclinical oncology model development and drug testing.

The Company's current study examines the anti-cancer properties of cepharanthine (monotherapy) in a panel of sixty solid and liquid cancer cell types and does so by comparing cell growth inhibition following exposure to current standard of care agents. Data corresponding thirty-five of the sixty cancer cell lines have now been reported to the Company. Eleven cancer cell lines were markedly responsive to cepharanthine in comparison to current standard of care agents at concentrations that are expected to be safe and feasible under a human clinical setting. The final twenty-five cancer cell line results are expected within the next two weeks.

To follow up on these highly encouraging results, PharmaDrug will quickly initiate an additional *in vitro* efficacy study to assess the potential of cepharanthine to provide additive and/or synergistic benefits in combination (combo-therapy) with current standard of care agents. The outcome of these studies is anticipated to strengthen and broaden the foundation of provisional patent(s) which will be filed imminently. Finally, PharmaDrug will use key findings from the mono and combo-therapy studies to design and execute several parallel tumor efficacy studies in gold standard animal models. The distillation of these efforts will provide PharmaDrug with additional intellectual property, downstream licensing opportunities in the oncology space, but most importantly, a clear path for electing a lead cancer indication for their internal development program.

Daniel Cohen, CEO of PharmaDrug commented: "We are extremely excited with the results of this study demonstrating the potential of cepharanthine in treating multiple forms of cancer known to commonly escape response through the development of chemoresistance. Although cepharanthine is described in scientific literature as a potential cancer therapeutic, we did not expect to see the noted significant growth inhibition in difficult to treat cancers. Cepharanthine is on its way to establishing itself as a once per day, oral anti-cancer therapeutic with a well-established safety profile which will pave the way for an expedited clinical development pathway and future partnering opportunities with pharmaceutical companies. We look forward to providing continued updates on our intellectual property, research, clinical, regulatory and manufacturing activities for PD-001; our novel oral formulation of cepharanthine, with the aim of working towards a first-in-human, proof-of-concept clinical trial under an FDA IND approval."

Based on the interim positive results, the Company has initiated the following activities:

- Broadening intellectual property with the filing of provisional patents on cepharanthine for specific cancers. These findings will be made public after being filed with the patent office;
- Completing the second phase of the ongoing pre-clinical study in September, which may generate additional discoveries and broadening of the Company's intellectual property portfolio;
- Pursuing FDA IND-enabling animal studies in the fall to evaluate the benefit of cepharanthine alone (monotherapy) or when combined with relevant first and second-line chemotherapy drugs to support future human clinical studies; and

- Initiating the scale-up processes and Good Manufacturing Practice (GMP) production of PD-001 (novel oral formulation of cepharanthine) in preparation for the first-in-human proof-of-concept clinical trial.

PharmaDrug's cancer program is based on cepharanthine's known anti-cancer activities. Cepharanthine has been shown in preclinical efficacy models to restore cancer cell sensitivity to multiple unrelated classes of chemotherapy. Multidrug resistance continues to represent a considerable clinical challenge. As such, preclinical cancer studies aimed at elucidating the mechanisms that underly chemoresistance; including the critical role drug efflux pumps play in this phenomenon by reducing the intracellular concentration of chemotherapeutic drugs, are of particular interest to PharmaDrug. Cepharanthine has been shown in preclinical studies to potently reverse chemoresistance by downregulating expression of ABCB1, the transcript of which codes for multidrug resistance protein 1, (MDR1, aka P- glycoprotein). Importantly, several prior *in vitro* and *in vivo* studies have shown that cepharanthine-mediated reductions in ABCB1 expression restores cancer cell sensitivity to a range of chemotherapeutics including taxanes, vinca alkaloids and platinum-based drugs[1-4]. Collectively the studies currently being undertaken by the Company aim to identify and provide focus to novel opportunities in oncology by revealing optimal drug combinations and situations where PD-001 can prevent, lessen, or reverse chemoresistance, and/or provide additive/synergistic benefit to existing treatments.

About PD-001 (Enteric-coated Cepharanthine)

Cepharanthine is a natural product and an approved drug used for more than 70 years in Japan to successfully treat a variety of acute and chronic diseases. In clinical research, Cepharanthine has been shown to exhibit multiple pharmacological properties including anti-oxidative, anti-inflammatory, immuno-regulatory, anti-cancer, anti-viral and anti-parasitic properties[5]. However, historically Cepharanthine's low oral bioavailability has represented a major obstacle to realizing its full clinical potential.

The Company is focused on advancing the clinical development of an improved oral formulation of Cepharanthine (PD-001) to treat rare cancers and infectious diseases. Compared to generic Cepharanthine, PD-001 has been shown in rodent and non-rodent models to possess markedly superior bioavailability (more easily absorbed). These findings support the development of an orally administered formulation, and in so doing, removes the undesirable requirement for frequent intravenous dosing.

About PharmaDrug Inc.

PharmaDrug is a specialty pharmaceutical company focused on the research, development and commercialization of controlled-substances and natural medicines such as psychedelics, cannabis and naturally-derived approved drugs. The Company owns 80% of Pharmadrug Production GmbH, a German medical cannabis distributor, with a Schedule I European Union narcotics license and German EuGMP certification allowing for the importation and distribution of medical cannabis to pharmacies in Germany and throughout the EU. The Company also owns 100% of Super Smart, a Dutch company building a modern adult use psychedelic retail business with an elevated and educational focus. PharmaDrug recently acquired Sairiyo Therapeutics, a biotech company that specializes in researching and reformulating established natural medicines with a goal of bringing them through regulatory and research driven clinical trials.

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THE CANADIAN SECURITIES EXCHANGE HAS NOT REVIEWED NOR DOES IT ACCEPT RESPONSIBILITY FOR THE ADEQUACY OR ACCURACY OF THIS RELEASE.

This press release contains "forward-looking information" within the meaning of applicable securities legislation. All statements, other than statements of historical fact, included herein are forward-looking information. Generally, forward-looking information may be identified by the use of forward-looking terminology such as "plans", "expects" or "does not expect", "proposed", "is expected", "budgets", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases, or by the use of words or phrases which state that certain actions, events or results may, could, would, or might occur or be achieved. In particular, this press release contains forward-looking information in relation to: the timing of the proposed non-clinical and clinical manufacturing of Cepharanthine for the Company's rare cancer and infectious diseases programs; the ability to expedite development timelines by leveraging SwRI's existing Cepharanthine preclinical data sets and manufacturing know-how; the ability to advance clinical development of an improved oral formulation of Cepharanthine to treat rare cancers and infectious diseases; the ability to obtain applicable approval for the use of Cepharanthine to treat esophageal cancer; the timing and potential results of the Company's plan to initiate high throughput studies to screen a large panel of additional cancers; the Company's plans to evaluate the benefit of its novel oral formulation of Cepharanthine in an animal model of SARS-CoV-2 infection and its proposed discussions with regulators regarding same. This forward-looking information reflects the Company's current beliefs and is based on information currently available to the Company and on assumptions the Company believes are reasonable. These assumptions include, but are not limited to the ability of the Company to successfully execute on its plans for the Company and Sairiyo; the ability to complete the studies referenced herein and the results thereto; the ability to obtain required regulatory approvals and the Company's continued response and ability to navigate the COVID-19 pandemic being consistent with, or better than, its ability and response to date.

Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed or implied by such forward-looking information. Such risks and other factors may include, but are not limited to: general business, economic, competitive, political and social uncertainties; general capital market conditions and market prices for securities; the actual results of the Company's future operations; competition; changes in legislation affecting the Company; the ability to obtain and maintain required permits and approvals, the timing and availability of external financing on acceptable terms; lack of qualified, skilled labour or loss of key individuals; risks related to the COVID-19 pandemic including various recommendations, orders and measures of governmental authorities to try to limit the pandemic, including travel restrictions, border closures, non-essential business closures, service disruptions, quarantines, self-isolations, shelters-in-place and social distancing, disruptions to markets, economic activity, financing, supply chains and sales channels, and a deterioration of general economic conditions; and a deterioration of financial markets that could limit the Company's ability to obtain external financing.

A description of additional risk factors that may cause actual results to differ materially from forward-looking information can be found in the Company's disclosure documents on the SEDAR website at www.sedar.com. Although the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. Accordingly, readers should not place undue reliance on forward-looking information. Readers are cautioned that the foregoing list of factors is not exhaustive. Readers are further cautioned not to place undue reliance on forward-looking information as there can be no assurance that the plans, intentions or expectations upon which they are placed will occur. Such information, although considered reasonable by management at the time of preparation, may prove to be incorrect and actual results may differ materially from those anticipated.

The Company's securities have not been registered under the U.S. Securities Act of 1933, as amended (the "U.S. Securities Act"), or applicable state securities laws, and may not be offered or

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