
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 6-K

**REPORT OF FOREIGN PRIVATE ISSUER PURSUANT TO RULE 13a-16 OR 15d-16 UNDER THE SECURITIES
EXCHANGE ACT OF 1934**

For the month of March 2023

Commission File Number: **001-39458**

Medicenna Therapeutics Corp.
(Translation of registrant's name into English)

2 Bloor St. W., 7th Floor
Toronto, Ontario M4W 3E2, Canada
(Address of principal executive office)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F.
Form 20-F Form 40-F

Other Events

On March 30, 2023, Medicenna Therapeutics Corp. (“Medicenna” or the “Company”) issued a press release announcing updated data from the Phase 1/2 ABILITY study of MDNA11. These data include the most recent anti-tumor activity data from the trial’s first four dose escalation cohorts and initial pharmacokinetic/pharmacodynamic (PK/PD) data from the fifth dose escalation cohort. Initial PD data from ABILITY’s fifth dose escalation cohort reported in the press release were consistent with the encouraging findings from the first four cohorts, with MDNA11 continuing to exhibit prolonged, selective and dose-dependent effects on anti-cancer immunity. Results showed MDNA11 stimulating the proliferation and activation of anti-cancer CD8+ T cells but not Tregs, which are associated with pro-tumor immune pathways. In addition, the data show post-treatment expansion of anti-cancer NK cells but not eosinophils, which are associated with vascular leak syndrome (a known side effect of the only approved IL-2 therapy). Moreover, new PK data showed dose-dependent increases in exposure that were sustained with repeat dosing, suggesting there is no clinically-meaningful anti-drug antibody response to MDNA11. Taken together, these results suggest MDNA11’s ability to further boost immune activity may be enhanced at higher doses.

Medicenna expects to report initial anti-tumor activity data from ABILITY’s fifth dose escalation cohort at a medical meeting in the second quarter of 2023. Early anti-tumor activity data from ABILITY’s sixth dose escalation cohort and Phase 2 single-agent expansion portion are expected in the third quarter of 2023. Early anti-tumor activity data from ABILITY’s combination arm evaluating MDNA11 plus pembrolizumab are expected in the fourth quarter of 2023.

Forward Looking Statements

This Form 6-K contains forward-looking statements within the meaning of applicable securities laws that relate to the future operations of the Company, plans and projections and other statements, including statements on the clinical development and potential of MDNA11 and the report of additional data, that are not historical facts. Forward-looking statements are often identified by terms such as “will”, “may”, “should”, “anticipate”, “expect”, “believe”, “seek”, “potentially” and similar expressions, and are subject to risks and uncertainties. There can be no assurance that such statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements. Important factors that could cause actual results to differ materially from the Company’s expectations include the risks detailed in the latest Annual Information Form and Annual Report on Form 20-F of the Company and in other filings made by the Company with the applicable securities regulators from time to time in Canada and the United States.

The reader is cautioned that assumptions used in the preparation of any forward-looking information may prove to be incorrect. Events or circumstances may cause actual results to differ materially from those predicted, as a result of numerous known and unknown risks, uncertainties, and other factors, many of which are beyond the control of the Company. The reader is cautioned not to place undue reliance on any forward-looking information. Such information, although considered reasonable by management, may prove to be incorrect and actual results may differ materially from those anticipated. Forward-looking statements contained in this news release are expressly qualified by this cautionary statement. The forward-looking statements contained in this news release are made as of the date hereof and except as required by law, we do not intend and do not assume any obligation to update or revise publicly any of the included forward-looking statements.

The information set forth above in this Form 6-K shall be deemed to be incorporated by reference into the registration statement on Form F-3 (File Number 333-269868) and Form S-8 (File Number 333-240225), and related prospectuses, as such registration statements and prospectuses may be amended from time to time, and to be a part thereof from the date on which this report is filed, to the extent not superseded by documents or reports subsequently filed or furnished.

The information in the attached Exhibit 99.1 is being furnished and shall not be deemed “filed” for the purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), or otherwise subject to the liabilities of that Section, nor shall it be deemed incorporated by reference in any filing made by the Company under the Securities Act of 1933, as amended, or the Exchange Act, except as otherwise set forth herein or as shall be expressly set forth by specific reference in such a filing.

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Description</u>
99.1	Press Release dated March 30, 2023

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

MEDICENNA THERAPEUTICS CORP.

Date: March 30, 2023

By: /s/ Elizabeth Williams
Name: Elizabeth Williams
Title: Chief Financial Officer

Medicenna Provides Clinical Update from Monotherapy Dose Escalation Portion of Phase 1/2 ABILITY Study

- Additional evidence of durable anti-cancer activity with MDNA11 monotherapy seen in latest radiographic scans from first four dose escalation cohorts
- Continued tumor reduction and complete regression of one of three metastatic lesions in fourth-line pancreatic cancer patient with confirmed partial response
 - Stable disease maintained for more than 70 weeks in patient with metastatic melanoma
- MDNA11 continues to selectively and dose-dependently stimulate anti-cancer immune cells through ABILITY's fifth dose escalation cohort

TORONTO and HOUSTON, March 30, 2023 (GLOBE NEWSWIRE) -- Medicenna Therapeutics Corp. ("Medicenna" or "the Company") (NASDAQ: MDNA TSX: MDNA), a clinical stage immunotherapy company, today announced updated data from its Phase 1/2 ABILITY study of MDNA11, a next-generation IL-2 with superior CD122 (IL-2 receptor beta) binding without CD25 (IL-2 receptor alpha) affinity thereby preferentially stimulating cancer killing effector T cells and NK cells. These data include the most recent anti-tumor activity data from the trial's first four dose escalation cohorts and initial pharmacokinetic/pharmacodynamic (PK/PD) data from the fifth dose escalation cohort.

"MDNA11 continues to demonstrate prolonged and persistent single-agent activity in heavily pre-treated, end-stage cancer patients, while preserving the desired PK/PD and safety profiles that may contribute to its best-in-class potential," said Fahar Merchant, Ph.D., President and CEO of Medicenna. "In the metastatic pancreatic cancer patient who had previously achieved a confirmed partial response, tumor reduction of both target lesions continued. We also observed complete regression of the non-target lesion. Furthermore, a patient with metastatic melanoma maintained stable disease for more than 70 weeks. Finally, PK/PD data indicate that MDNA11's ability to selectively stimulate an anti-cancer immune response may be enhanced at higher doses with improved drug exposure."

"Collectively, these findings fuel our enthusiasm as we look forward to upcoming readouts from ABILITY's Phase 2 expansion cohorts, which will evaluate an optimal dose in less advanced cancer and in patients with tumor types that are most likely to benefit from MDNA11."

Initial PD data from ABILITY's fifth dose escalation cohort, reported today, were consistent with the encouraging findings from the first four cohorts. MDNA11 continued to exhibit prolonged, selective, and dose-dependent effects on anti-cancer immunity. Results showed MDNA11 stimulating the proliferation and activation of anti-cancer CD8+ T cells but not regulatory T cells (Tregs), which are associated with pro-tumor immune pathways. The data also showed post-treatment expansion of anti-cancer NK cells but not eosinophils, which are associated with vascular leak syndrome (a known side effect of the only approved IL-2 therapy). Moreover, new PK data showed dose-dependent increases in exposure that were sustained with repeat dosing, suggesting there is no clinically meaningful anti-drug antibody response to MDNA11. Taken together, these results suggest MDNA11's ability to further boost immune activity may be enhanced at higher doses.

As previously reported, tumor control was achieved in five of fourteen evaluable participants in ABILITY's first four (low and mid) dose escalation cohorts. Participants in these cohorts failed up to four lines of systemic therapy prior to enrolling in the trial, including eleven (79%) who relapsed on, could not tolerate, or did not respond to at least one prior immunotherapy with a checkpoint inhibitor. Three participants were on-study at the prior data cutoff date: a fourth-line (4L) metastatic pancreatic ductal adenocarcinoma (PDAC) patient with a confirmed partial response (PR); a 3L metastatic melanoma patient with stable disease (SD); and a 3L non-clear cell renal cell carcinoma patient with SD. Updated anti-tumor activity data on these participants are described below and incorporated into swimmer and waterfall plots in Medicenna's investor presentation.

Participant with 4L metastatic PDAC

- Maintained confirmed PR, with both target lesions shrinking by a total of 59% at week 46 from 37% at week 23, relative to baseline.
- Achieved complete regression of the non-target metastatic lesion.

Participant with 3L metastatic melanoma

- Maintained SD at week 70 scan and has escalated to a 90 µg/kg dose of MDNA11 (SD first achieved at 10 µg/kg; participant was on a 60 µg/kg dose at the most recent scan).

Participant with 3L non-clear cell renal cell carcinoma

- Week 23 scan showed progressive disease demonstrating a meaningful period of stable disease prior to progression.

Dosing is currently underway in the sixth dose escalation cohort of the ABILITY study. No dose-limiting toxicities, dose interruptions, dose de-escalations, or treatment discontinuations due to safety issues have been observed to-date. Participants in

Cohort 6 receive 30, 60, and 90 µg/kg “priming” doses of MDNA11 followed by a further step-up to a fixed 120 µg/kg dose. MDNA11 is dosed intravenously every two weeks in ABILITY.

Medicenna expects to report initial anti-tumor activity data from ABILITY’s fifth dose escalation cohort at a medical meeting in the second quarter of 2023. Early anti-tumor activity data from ABILITY’s sixth dose escalation cohort and Phase 2 single-agent expansion portion are expected in the third quarter of 2023. Early anti-tumor activity data from ABILITY’s combination arm evaluating MDNA11 plus pembrolizumab are expected in the fourth quarter of 2023.

About the Phase 1/2 ABILITY Study

The ABILITY (A Beta-only IL-2 ImmunoTherapY) study is designed to assess the safety, pharmacokinetics, pharmacodynamics, and anti-tumor activity of various doses of intravenously administered MDNA11 in patients with advanced, relapsed, or refractory solid tumors. The trial includes an MDNA11 monotherapy arm, as well as a combination arm designed to evaluate MDNA11 with KEYTRUDA® (pembrolizumab). Approximately 104 patients are expected to be enrolled into the ABILITY Study. Following establishment of the recommended Phase 2 dose (RP2D) and optimal treatment schedule in the study’s dose escalation phase, Medicenna plans to conduct a dose expansion phase that will enroll patients with melanoma and other solid tumors in monotherapy and combination settings. For more information, see ClinicalTrials.gov Identifier: NCT05086692.

KEYTRUDA® is a registered trademark of Merck Sharp & Dohme LLC, a subsidiary of Merck & Co., Inc., Rahway, NJ, USA.

About Medicenna

Medicenna is a clinical stage immunotherapy company focused on the development of novel, highly selective versions of IL-2, IL-4 and IL-13 Superkines and first in class Empowered Superkines. Medicenna’s long-acting IL-2 Superkine, MDNA11, is a next-generation IL-2 with superior CD122 (IL-2 receptor beta) binding without CD25 (IL-2 receptor alpha) affinity thereby preferentially stimulating cancer killing effector T cells and NK cells. Medicenna’s early-stage BiSKITs™ program, (Bifunctional SuperKine ImmunoTherapies) is designed to enhance the ability of Superkines to treat immunologically “cold” tumors. Medicenna’s IL-4 Empowered Superkine, bizaxofusp (formerly MDNA55), has been studied in 5 clinical trials including a Phase 2b trial for recurrent GBM, the most common and uniformly fatal form of brain cancer. Bizaxofusp has obtained FastTrack and Orphan Drug status from the FDA and FDA/EMA, respectively.

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Further Information

For further information about the Company please contact:

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Investor Contact

For more investor information, please contact:

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