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: August 2014

ALCOBRA LTD.
(Translation of registrant's name into English)

Amot Investment Building
2 Weizman St. 9th Floor
Tel Aviv 6423902 Israel
(Address of principal executive offices)

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 x Form 40-F ☐

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulations S-T Rule 101(b)(1):_____

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulations S-T Rule 101(b)(7):_____

Indicate by check mark, whether the registrant by furnishing the information contained in this Form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes ☐ No ☒

If "Yes" is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b): ____

Attached hereto and incorporated by reference herein is the registrant's press release issued on August 8, 2014.

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.

Alcobra Ltd.
(Registrant)

By /s/ Dr. Yaron Daniely
Name: Dr. Yaron Daniely

Chief Executive Officer and President

Date: August 8, 2014

U.S. Investor Contacts
LifeSci Advisors, LLC
Michael Rice
646-597-6979
mrice@lifesciadvisors.com

Media Inquiries
Sam Brown, Inc.
Mike Beyer
773-463-4211
mikebeyer@sambrown.com

Israel Investor Contact:
Alcobra Investor Relations
Debbie Kaye
+972-72 2204661
debbie@alcobra-pharma.com

ALCOBRA RELEASES NEW NEUROIMAGING DATA SUPPORTING PRO-COGNITIVE EFFECTS OF MDX

Tel Aviv, Israel – August 8, 2014 – Alcobra Ltd. (NasdaqGM: ADHD), an emerging pharmaceutical company focused on the development of new medications to help patients with cognitive disorders, including Attention Deficit Hyperactivity Disorder (ADHD) and Fragile X Syndrome, today released new imaging data on brain activity associated with MDX treatment.

Alcobra released topline results from a pharmacological MRI study designed to evaluate the regions of the brain that are modulated by MDX. The study evaluated brain response to a single administration of Metadoxine in rats. The experiment included 3 treatment arms: a placebo group, a low-dose group (corresponding approximately to the 700mg MDX dose in humans), and a high-dose group (corresponding approximately to the 1400mg MDX dose in humans).

Neuronal activity was examined by evaluating Blood Oxygen Level Dependent (BOLD) MRI imaging, which measures brain oxygen levels that are related to changes in brain nerve cell activity. BOLD phMRI was employed to study 170 different areas of the brain following placebo or drug administration.

The results showed that Metadoxine produced a significant, dose-dependent decrease in BOLD signal in highly selective regions of the brain including the prefrontal cortex and showed a statistically significant increase in BOLD response in brain regions including the central nucleus of the amygdala and the lateral hypothalamus. In addition, none of the mesolimbic dopamine system brain regions (such as the nucleus accumbens), known to be involved in the reinforcing effects of scheduled drugs, were significantly affected by Metadoxine at any dose level, which is consistent with previously presented data.

"Metadoxine produced a specific and extensive effect in brain areas related to executive function, learning and memory, motivation, information integration and processing, attention and cognition," said Dr. Jonathan Rubin, Chief Medical Officer of Alcobra. "A functional decrease in these neuronal circuits mediated by MDX may help ADHD patients filter unnecessary sensory stimuli. These findings also confirm and extend previous data demonstrating a novel monoamine-independent mechanism of action of Metadoxine characterized by GABAergic inhibitory transmission modulation."

Dr. Jonathan Rubin will present the results during the company's second quarter financial results and operational update call and webcast on Monday, August 11.

About Alcobra Ltd.
Alcobra Ltd. is an emerging pharmaceutical company primarily focused on the development and commercialization of a proprietary drug candidate, MDX (MG01CI), to treat cognitive disorders including Attention Deficit Hyperactivity Disorder (ADHD) and Fragile X Syndrome. MDX has completed multiple Phase II studies in adults with ADHD and has completed enrollment in a Phase III study in adults with ADHD. The company has also begun separate Phase IIb trials in pediatric ADHD and in adolescents and adults with Fragile X Syndrome. Alcobra was founded in 2008 and is traded on the NASDAQ under "ADHD". For more information please visit the Company's website, www.alcobra-pharma.com, the content of which is not incorporated herein by reference.

Forward Looking Statements

This press release may contain forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995 and other Federal securities laws. Because such statements deal with future events and are based on Alcobra's current expectations, they are subject to various risks and uncertainties and actual results, performance or achievements of Alcobra could differ materially from those described in or implied by the statements in this press release. In addition, historic results of scientific research do not guarantee that the conclusions of future research would not suggest different conclusions or that historic results referred to in this press release would be interpreted differently in light of additional research or otherwise. The forward-looking statements contained or implied in this press release are subject to other risks and uncertainties, including those discussed under the heading "Risk Factors" in Alcobra Ltd.'s Annual Report on Form 20-F for the fiscal year ended December 31, 2013 filed with the Securities and Exchange Commission (SEC) and in subsequent filings with the SEC. Except as otherwise required by law, Alcobra disclaims any intention or obligation to update or revise any forward-looking statements, which speak only as of the date hereof, whether as a result of new information, future events or circumstances or otherwise.

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