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: October 2013

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 ☒ 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 October 14, 2013.

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: October 15, 2013

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Alcobra Ltd. Announces New Findings on Novel Mechanism of Action for its Proprietary Drug, MG01CI, for Treatment of Cognitive Dysfunctions

Data from preclinical studies link MG01CI to established molecular targets and neurophysiological activities involved in learning and memory

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MG01CI shows no effect on dopamine or noradrenaline targets in brain, unlike currently available ADHD therapies

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Tel Aviv, Israel – (October 14, 2013) – Alcobra Ltd. (NASDAQ CM: ADHD) (the "Company"), an emerging biopharmaceutical company primarily focused on the development and commercialization of its proprietary drug, MG01CI (Metadoxine extended-release), to treat cognitive dysfunctions, such as ADHD and Fragile X Syndrome, announced today the results from a series of preclinical studies that evaluated the mechanism of action of MG01CI. MG01CI is composed of a dual-release formulation of Metadoxine that provides immediate as well as extended-release formulations in a single oral dose.

"These studies shed important light on the novel mechanism of action and the unique effects that MG01CI may have in treating cognitive dysfunctions," commented Dr. Yaron Daniely, President and CEO of Alcobra Ltd. "MG01CI appears to enhance the ability of cells to correct abnormal signaling pathways that may be involved with cognitive impairment, while not increasing levels of neurotransmitters in the brain such as dopamine, norepinephrine and serotonin. We believe these findings might account for the improved effect on attention as well as the favorable tolerability profile that we have observed thus far in clinical trials with MG01CI."

The studies showed that Metadoxine is a selective antagonist to the 5-HT2B receptor, a member of the serotonin receptor family. Importantly, Metadoxine did not show any binding to other serotonin receptors, and did not bind the characterized targets of existing stimulant and non-stimulant medications (dopamine and norepinephrine receptors and transporters). In accordance with these findings, Metadoxine did not affect the concentration of these neurotransmitters or their metabolites in the brain.

Metadoxine treatment affected several specific molecular targets residing inside the cell in a dose-dependent manner, including critical signaling modulators such as the proteins Akt and Extracellular signal-related Kinase (ERK), but did not affect other targets such as cyclic AMP (cAMP) and Protein Kinase A (PKA). In a preclinical Fragile X disease model, elevated levels of Akt and ERK were normalized (reduced) by Metadoxine, while levels of the GST protein were increased. Electrophysiological studies also showed that Metadoxine caused a dose-dependent, reversible reduction in glutamatergic excitatory transmission and enhancement of GABAergic inhibitory transmission, changes that may be associated with cognitive regulation.

"Our findings to date suggest a distinct mechanism of action for Metadoxine in treating cognitive disorders such as ADHD and Fragile X Syndrome," added Dr. Jonathan Rubin, Chief Medical Officer of Alcobra Ltd. "We are eager to move forward with additional clinical trials in these populations as we learn more about the differentiated characteristics of our product."

About Alcobra Ltd.

Alcobra Ltd. is an emerging biopharmaceutical company primarily focused on the development and commercialization of a proprietary drug, MG01CI, to treat cognitive dysfunctions including Attention Deficit Hyperactivity Disorder (ADHD) and Fragile X Syndrome. MG01CI has completed Phase II studies to treat Attention Deficit Hyperactivity Disorder. The company was founded in 2008 and is headquartered in Tel Aviv, Israel. 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. For example, forward-looking statements include statements that imply that MG01CI may be helpful to treat cognitive dysfunctions such as ADHD and Fragile X or that we will receive favorable results in clinical trials in MG01CI. 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. 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 registration statement on Form F-1 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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