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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of report (date of earliest event reported): May 30, 2017

TONIX PHARMACEUTICALS HOLDING CORP. (Exact name of registrant as specified in its charter)

Nevada (State or Other Jurisdiction of Incorporation) 001-36019 (Commission File Number) 26-1434750 (IRS Employer Identification No.)

509 Madison Avenue, Suite 306, New York, New York 10022 (Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (212) 980-9155

Copy of correspondence to:

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Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

□ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

□ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

□ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

□ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter). Emerging growth company \Box

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. \Box

Item 8.01 Other Events.

On May 30, 2017, Tonix Pharmaceuticals Holding Corp. (the "Company") presented an oral pipeline presentation entitled "Low-Dose Bedtime Sublingual Cyclobenzaprine (TNX-102 SL) for the Treatment of Military-Related PTSD: Retrospective Analyses of the Mediators and Moderators of Treatment Response" (the "Presentation"), at the 2017 American Society of Clinical Psychopharmacology Annual Meeting, in Miami Beach, Florida (the "ASCP Meeting").

The foregoing description of the Presentation is qualified in its entirety by reference to the Presentation, a copy of which is filed as Exhibit 99.01 to, and is incorporated by reference in, this report.

On May 30, 2017, the Company issued a press release announcing the Presentation at the ASCP Meeting. A copy of the press release that discusses this matter is filed as Exhibit 99.02 to, and incorporated by reference in, this report.

The information in this Current Report is being furnished and shall not be deemed "filed" for the purposes of Section 18 of the Securities Exchange Act of 1934 or otherwise subject to the liabilities of that Section. The information in this Current Report shall not be incorporated by reference into any registration statement or other document pursuant to the Securities Act of 1933, except as shall be expressly set forth by specific reference in any such filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

99.01	Low-Dose Bedtime Sublingual Cyclobenzaprine (TNX-102 SL) for the Treatment of Military-Related PTSD: Retrospective
	Analyses of the Mediators and Moderators of Treatment Response Presentation*
99.02	Press Release, dated May 30, 2017, issued by Tonix Pharmaceuticals Holding Corp.*

* Furnished herewith.

2

SIGNATURE

Pursuant to the requirement 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.

TONIX PHARMACEUTICALS HOLDING CORP.

Date: May 30, 2017

By: <u>/s/ SETH LEDERMAN</u> Seth Lederman Chief Executive Officer





Bedtime Sublingual Transmucosal Cyclobenzaprine (TNX-102 SL) for the Treatment of Military-Related PTSD:

Retrospective Analyses of the Mediators and Moderators of Treatment Response

Presented by Gregory Sullivan, MD at American Society of Clinical Psychopharmacology Annual Meeting, Miami, FL May 30, 2017



2

Proposed indication for TNX-102 SL* is for the treatment of posttraumatic stress disorder (PTSD):

Affects 8.6 million U.S. adults¹

Definition of military-related PTSD:

Any PTSD that has developed in response to any DSM-5 PTSD Criterion A-qualifying trauma(s) that occurred during military service - includes combat and non-combat traumas

> Why target military-related PTSD?

- No treatment response observed in U.S. military population with the two FDA-approved selective serotonin reuptake inhibitors (SSRIs) for PTSD^{2,3,4}
 No other type of pharmacological treatment had been shown to be effective in any
- large multicenter clinical trial in a U.S. military population

*TNX-102 SL (cyclobenzaprine HCl sublingual tablets) is an investigational new drug and is not approved for any indication.

¹Kessler et al., Arch Gen Psych 2005; Prevalence rate of 3.5% applied to U.S. Census estimate of 247M U.S. adult (≥18) population in 2015; ² Friedman MJ et al. J Clin Psychiatry 2007;68:711-20. ³ Zoloft® Package Insert, Prizer, NY, NY; August 2014. ⁴ Paxil® Package Insert, Glaxo, June 2014; (www.census.gov/quickfacts/table/PST045215/00);

What is TNX-102 SL?

- TNX-102 SL is a patented¹ sublingual eutectic formulation of cyclobenzaprine (CBP) for transmucosal absorption
 - > Tricyclic molecule with high affinity for target receptors considered to play key roles in sleep physiology and Nectornal emotional memory processing
 Functional studies show antagonism at each of²

3

- - > 5-HT_{2A}
 - α₁-adrenergic
- Histamine-H₁
 No recognized risk of addiction
- TNX-102 SL is designed for bedtime administration with desirable nighttime pharmacokinetic profile and pharmacodynamics effects
 - > Rapid systemic exposure and increased bioavailability during sleep period
 - > Avoids first-pass metabolism reducing exposure to long-lived active metabolite, norcyclobenzaprine (nCBP) > t_{1/2}~72 hours
 - Less selective for target receptors -> undesirable off-target functional activities
 - Exposure (AUC₀₋₄₈) for CBP/nCBP of 1.9 for TNX-102 SL vs. 1.2 for oral IR tablet²
- TNX-102 SL has been designated a Breakthrough Therapy for PTSD by the U.S. Food and Drug Administration (FDA)

¹ Notice of Allowance for Eutectic Proprietary ProtecticTM Formulation Patent issued by the U.S. Patent and Trademark Office; ² Daugherty et al. Society of Biological Psychiatry 70th Annual Scientific Convention, May 14-16, 2015 Toronto, Ontaria, Canada. ³Lederman et al. European Congress of Rheumatology, Rome, June 2015; IR, immediate-release



Rationale for Targeting of Sleep for Treatment of PTSD

4

PTSD is a disorder of recovery

- > Most people exposed to an extreme trauma recover in a few weeks
- > New learning, e.g. extinction, and memory processing are essential to recovery
- In PTSD, memory processing, e.g. extinction consolidation,^{1,2} may be impeded due to insufficient sleep quality

TNX-102 SL targets sleep quality

> Potent binding and antagonism at receptors that regulate sleep quality³, e.g. 5-HT_{2A}, α_1 -adrenergic, and histamine H₁ receptors, during the sleep period is hypothesized to be permissive to sleep quality-dependent recovery processes from trauma and PTSD

¹ Pace-Schott et al. Biol Mood Anxiety Disord 2015;5:3. ² Menz et al. J Neurosci 2016;36(7):2148. ³ Daugherty et al., Abstract 728, Society of Biological Psychiatry 70th Annual Scientific Convention, May 14-16, 2015,Toronto Ontario, Canada



Phase 2 AtEase Study in Military-Related PTSD

Placebo at bedtime once-daily	Randomized, double-blind, placebo- controlled trial in military-related PTSD
TNX-102 SL at bedtime once-daily 2.8 mg N= 90	 Efficacy analysis from 231 patients; 24 U.S. clinical sites
	Enrolled patients with baseline CAPS-5 score ≥ 29
TNX-102 SL at bedtime once-daily5.6 mg (2 x 2.8 mg)N= 49	 Primary Efficacy Analysis: Difference in CAPS-5 score change from baseline between TNX-102 SL 2.8 mg and placebo at week 12
12 weeks	 Key Secondary Measures: PROMIS Sleep Disturbance, CGI-I, SDS
CAPS-5, Clinician-Administered PTSD Scale for DSM-5	

5



AtEase Study Results: Primary and Sensitivity Analyses of CAPS-5 Change from Baseline



- TNX-102 SL 2.8 mg dose (N=90) had a greater CAPS-5 change from baseline at Week 2 (MMRM, p=0.040) and Week 4 (MMRM, p=0.030) but did not achieve a significantly greater CAPS-5 change from baseline at Week 12 (MMRM, p=0.259, NS) compared with placebo (N=92)
- TNX-102 SL 5.6 mg dose (N=49) had a strong trend (MMRM, p=0.053) for greater CAPS-5 change from baseline at Week 12 compared with placebo (N=92); Effect size of 0.36 (Cohen's d)
 - Pre-planned sensitivity analyses that accounted for missing data, as well as ANCOVA, showed statistically significant results for TNX-102 SL 5.6 mg v. placebo:

> MMRM with multiple imputation	p=0.031
> MMRM with hybrid LOCF/BOCF imputation	p=0.037
> ANCOVA	p=0.038

ANCOVA, analysis of covariance; BOCF, baseline observation carried forward; CAPS-5, Clinician-Administered PTSD Scale for DSM-5; LOCF, last observation carried forward; MMRM, mixed-effect model repeated measures; N, number; NS, not significant



AtEase Study Results: Primary Endpoint CAPS-5 Total Score by MMRM with MI



^{*}p=0.031, comparing placebo and TNX-102 SL 5.6 mg, *p<0.05, comparing placebo and TNX-102 SL 2.8 mg, by MMRM with MI, mixed-effect model repeated measures with multiple imputation; CAPS-5, Clinician Administered PTSD Scale for DSM-5; LS Mean, least squares mean © 2017 Tonix Pharmaceuticals Holding Corp.



> Trial Completion Rates: 73% Placebo; 79% TNX-102 SL 2.8 mg; 84% TNX-102 SL 5.6 mg

> Systemic adverse events (AEs) and local administration site reactions occurring at ≥5% rate in either TNX-102 SL group:

	Placebo	TNX-102 SL 2.8 mg	TNX-102 SL 5.6 mg
Systemic Adverse Events	(N=94)*	(N=93)*	(N=50)*
Somnolence	6.4%	11.8%	16.0%
Dry Mouth	10.6%	4.3%	16.0%
Headache	4.3%	5.4%	12.0%
Insomnia	8.5%	7.5%	6.0%
Sedation	1.1%	2.2%	12.0%
Local Administration Site Reaction			
Hypoaesthesia oral [#]	2.1%	38.7%	36.0%
Paraesthesia	3.2%	16.1%	4.0%
Glossodynia	1.1%	3.2%	6.0%

²Oral hypoaesthesia (tongue numbness) was most common AE, generally transient (<60 minutes), non-dose related and rated mild in 89% and moderate in 11% on TNX-102 SL; *Safety Population (N=237) © 2017 Tonix Pharmaceuticals Holding Corp.



- Mechanism of action of TNX-102 SL is hypothesized to be through improvement in sleep quality
- Sleep responded early in treatment with TNX-102 SL, by Week 2 on CAPS-5 sleep disturbance (SD) item
- PROMIS SD instrument administered on Weeks 4, 8 and 12
- In a post hoc analysis, examined the relationship between early response on sleep by PROMIS SD at Week 4 and change in severity of PTSD by the Week 12 endpoint in the three treatment groups (next slide)
 - For change in severity, used CAPS-5 total change from baseline without the sleep item (E6) to avoid co-linearity effects between the two variables



9





Summary of Hypothesized Mechanism of Action in PTSD

11

Recovery in PTSD Resulting from Treatment with TNX-102 SL is Mediated by Improvement in Sleep Quality

- Recovery is a learning process, e.g. depends on extinction learning
- > Extinction learning occurs in the daytime
- Consolidation (STM->LTM) of extinction occurs during sleep; roles for both REM and SWS
- Restoring quality of critical sleep stages may be permissive to consolidation of extinction memory and thereby allow normal recovery



LTM, long term memory; STM, short term memory; REM, rapid eye movement; SWS, slow wave sleep

Diagram adapted from Pace-Schott et al. Biol Mood Anxiety Disord 2015;5:3 © 2017 Tonix Pharmaceuticals Holding Corp.

Assessing CAPS-5 Entry Threshold in AtEase

>Score of \geq 29 on CAPS-5 (20 items) required at screening & baseline

>>50 on prior versions of CAPS (17 items) typical in previous drug registration trials

12

- > Extrapolation from prior versions of CAPS: $((50/17 \text{ items})/2) \times 20 \text{ items} = 29.4$
- Post-hoc analysis to impute CAPS for DSM-IV (iCAPS-IV) scores for each subject
 - Baseline iCAPS-IV score calculated by summing 17 items in common with CAPS-5 and multiplying by two (for 0-8 intensity + frequency rather than 0-4)
 - \geq 4.3% of the sample had baseline iCAPS-IV of \leq 50
 - > Choosing CAPS-5 \geq 33 results in all iCAPS-IV > 50
 - > 80% of mITT had baseline CAPS-5 of \ge 33

> Primary analysis of AtEase was run for subgroup with baseline CAPS-5 \geq 33

AtEase Retrospective Analysis: Effect Sizes for Total CAPS-5 and Cluster Scores

➤ Effect sizes calculated for total CAPS-5 and clusters for patients with entry CAPS-5 ≥33
 ➤ Larger effect size, in moderate range of 0.5, for total CAPS-5 and intrusion and hyperarousal clusters

13



➢ Based on findings of post-hoc imputed CAPS, a baseline CAPS-5 score ≥33 was set as PTSD severity inclusion criterion in Phase 3 trial



AtEase Study Retrospective Analysis: Remission from PTSD (CAPS-5 Baseline ≥33 Subgroup)



- Definition of remission used in AtEase was "Loss of Diagnosis and Endpoint CAPS-5 Score <11"</p>
- By Week 8, significantly more remitters in both 2.8 mg and 5.6 mg groups
- > By week 12:
 - 5.6 mg group trended for higher rate than placebo (rates increased in both groups)



Asterisks and hashmark represent pairwise comparisons, TNX-102 SL group v. placebo, logistic regression $*~p<0.05;~^{\circ}~p=0.060$



AtEase Study Retrospective Analysis: Sustained Remission in CAPS-5 Baseline ≥33 Subgroup

15

- Remission is more clinically meaningful if it is sustained
- In order to look at sustained remission in AtEase:
 - Determined rates of participants who met remission status at *both* Week 8 and Week 12
- > 21% of the TNX-102 SL 5.6 mg participants met for sustained remission v. 5% of placebo (p=0.02)
- In Phase 3, open label extension study of TNX-102 SL 5.6 mg will allow a look at sustained remission beyond Week 12



Remission = Loss of Diagnosis and CAPS-5 < 11 Asterisk and hashmark represent pairwise comparisons between TNX-102 SL and Placebox (*p=0.08, Odds Ratio 3.01 (0.89, 10.18) *p=0.02, Odds Ratio 4.60 (1.27, 16.66); logistic regression

Phase 3 HONOR Study in PTSD Enrolling



* Interim analysis

military-related PTSD:

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Larger adaptive design study

5.6 ma

12 weeks

© 2017 Tonix Pharmaceuticals Holding Corp.

2H 2018 - topline data anticipated, if 550 patients are studied

1H 2018 - IA outcome anticipated



- Phase 2 clinical investigation established that TNX-102 SL 5.6 mg is the potential efficacious and safe dose to treat PTSD in a military-related PTSD population (TNX-102 SL 5.6 mg, N=49 v. placebo, N=92)
 - ➤ Established CAPS-5 ≥33 as entry threshold for Phase 3 studies to confirm AtEase findings
- Relationship between early sleep improvement and Week 12 PTSD recovery supports mechanistic hypothesis that improved sleep quality is a mediator of TNX-102 SL treatment response
- ➤ TNX-102 SL 5.6 mg treatment resulted in sustained remission between Weeks 8 and 12 in 21% of participants that was statistically significant relative to placebo and approximately 4X the rate in placebo in the CAPS-5 ≥33 subgroup (TNX-102 SL, N=38 v. placebo, N=77)
- Phase 3 clinical investigation of TNX-102 SL 5.6 mg in military-related PTSD is ongoing





Thank you!



Tonix Pharmaceuticals Presented Retrospective Analyses of Treatment Response and Remission to TNX-102 SL in a Phase 2 Military-Related PTSD Study

Highlights of these Important Findings from AtEase Presented in Pipeline Presentation at the 2017 American Society of Clinical Psychopharmacology Annual Meeting

NEW YORK, May 30, 2017 (GLOBE NEWSWIRE) – Tonix Pharmaceuticals Holding Corp. (Nasdaq:TNXP) (Tonix), a company that is developing innovative pharmaceutical products to address public health challenges, presented an oral pipeline presentation on May 30, 2017 entitled "Low-Dose Bedtime Sublingual Cyclobenzaprine (TNX-102 SL) for the Treatment of Military-Related PTSD: Retrospective Analyses of the Mediators and Moderators of Treatment Response" at the 2017 American Society of Clinical Psychopharmacology Annual Meeting in Miami Beach. The presentation can be found on the Scientific Presentations page on <u>Tonix's website</u>. TNX-102 SL (cyclobenzaprine HCl sublingual tablets) is an investigational new drug and has not been approved for any indication. The U.S. Food and Drug Administration (FDA) has recently granted Breakthrough Therapy designation to TNX-102 SL for posttraumatic stress disorder (PTSD).

A mediator variable specifies how a particular effect or relationship between two other variables occurs. Sleep quality was a potential mediator of treatment response because improvements in sleep quality measured at week 4 by the PROMIS Sleep Disturbance scale in patients receiving TNX-102 SL 5.6 mg correlated with reduction in PTSD severity measured by change from baseline in the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) score at week 12. Baseline PTSD severity threshold was a potential moderator of treatment response. A retrospective analysis of the Phase 2 AtEase* data indicated a study entry CAPS-5 severity score of \geq 33 is more aligned with the entry criteria of previous PTSD pharmacotherapy registration trials using prior CAPS versions. In the AtEase baseline CAPS-5 \geq 33 subgroup, the effect size of TNX-102 SL 5.6 mg is approximately 0.5 on total CAPS-5 and also approximately 0.5 on cluster B (intrusion) and cluster E (arousal and reactivity) scores. The effect of TNX-102 SL was studied on remission, which was defined by CAPS-5 < 11 at week 12, and sustained remission relative to placebo. TNX-102 SL was well-tolerated with a high completion rate in AtEase. Non-dose related tongue numbness was commonly reported in participants receiving TNX-102 SL 2.8 mg or 5.6 mg group. No clinically significant and never rated as severe. There were no adverse event-related discontinuations in the TNX-102 SL 5.6 mg group. No clinically significant changes in weight or vital signs over the 12 weeks of study were observed.

Seth Lederman, M.D., president and chief executive officer of Tonix, commented, "We continue to work with the FDA to accelerate the development and registration of TNX-102 SL for PTSD. Our Phase 3 HONOR study is currently enrolling participants with military-related PTSD. A planned unblinded interim analysis on 50% of the randomized participants (N=275) is on track for the first half of 2018."

*AtEase is a Phase 2 multicenter, 12-week, double-blind placebo-controlled study conducted at 24 U.S. sites in men and women ages 18-65 years. Inclusions: PTSD DSM-5 Criterion A trauma(s) incurred during military service since 2001; screening and baseline CAPS-5 score ≥ 29 ; free of antidepressants ≥ 2 months from baseline; free of or washed off from other psychotropics; not participating in trauma-focused psychotherapy within a month from baseline. Exclusions: serious suicide risk; substance/alcohol use disorders within 6 months; lifetime bipolar I or II, psychotic, obsessive-compulsive, or antisocial personality disorders. Participants were randomized in 2:2:1 ratio to placebo, TNX-102 SL 2.8 mg or TNX-102 SL 5.6 mg. Primary analysis: comparison of mean change from baseline at Week 12 in CAPS-5 score between TNX-102 SL 2.8 mg and placebo.

About TNX-102 SL and the Phase 3 HONOR Study

TNX-102 SL is a patented sublingual transmucosal formulation of cyclobenzaprine that is in Phase 3 development. PTSD is a serious condition characterized by chronic disability, inadequate treatment options especially for military-related PTSD, and an overall high utilization of healthcare services that contributes to significant economic burdens. In a Phase 2 study, TNX-102 SL 5.6 mg was found to be effective in treating military-related PTSD, which formed the basis of the Breakthrough Therapy designation granted by the FDA. Tonix is currently conducting a Phase 3 trial of TNX-102 SL in military-related PTSD in the United States, the HONOR study, which is a 12-week randomized, double-blind, placebo-controlled trial evaluating the efficacy of TNX-102 SL 5.6 mg in participants with military-related PTSD. This two-arm, adaptive-design trial, is targeting enrollment of up to approximately 550 participants across approximately 35 clinical sites. An unblinded interim analysis will be conducted once the study has accumulated efficacy results from approximately 275 randomized participants. In a recent Cross-disciplinary Breakthrough meeting, the FDA confirmed that a single-study new drug application (NDA) approval could be possible if the topline data from the HONOR study are statistically very persuasive. Additional details of the HONOR study are available at www.thehonorstudy.com or https://clinicaltrials.gov/ct2/show/NCT03062540. The U.S. Patent and Trademark Office has issued a patent (U.S. Patent No. 9,636,408) protecting the composition and manufacture of the unique TNX-102 SL formulation. The Protectic™ protective eutectic and Angstro-Technology™ formulation claimed in the patent are important elements of Tonix's proprietary TNX-102 SL composition. This patent is expected to provide TNX-102 SL, upon NDA approval, with U.S. market exclusivity until 2034.

About Tonix Pharmaceuticals Holding Corp.

Tonix is developing innovative pharmaceutical products to address major public health challenges. In addition to TNX-102 SL for PTSD, Tonix is developing TNX-601 (tianeptine oxalate), a clinical candidate at pre-IND (Investigational New Drug) application stage, designed as a daytime treatment for PTSD and TNX-801, a live synthetic version of horsepox virus, at the pre-IND application stage, to be developed as a potential smallpox-preventing vaccine.

This press release and further information about Tonix can be found at www.tonixpharma.com.

Forward Looking Statements

Certain statements in this press release are forward-looking within the meaning of the Private Securities Litigation Reform Act of 1995. These statements may be identified by the use of forward-looking words such as "anticipate," "believe," "forecast," "estimate," "expect," and "intend," among others. These forward-looking statements are based on Tonix's current expectations and actual results could differ materially. There are a number of factors that could cause actual events to differ materially from those indicated by such forward-looking statements. These factors include, but are not limited to, substantial competition; our need for additional financing; uncertainties of patent protection and litigation; uncertainties of government or third party payor reimbursement; limited research and development efforts and dependence upon third parties; and risks related to failure to obtain FDA clearances or approvals and noncompliance with FDA regulations. As with any pharmaceutical under development, there are significant risks in the development, regulatory approval and commercialization of new products. Tonix does not undertake an obligation to update or revise any forward-looking statement. Investors should read the risk factors set forth in the Annual Report on Form 10-K for the year ended December 31, 2016, as filed with the Securities and Exchange Commission (the "SEC") on April 13, 2017, and future periodic reports filed with the SEC on or after the date hereof. All of Tonix's forward-looking statements are expressly qualified by all such risk factors and other cautionary statements. The information set forth herein speaks only as of the date hereof.

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