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# Tonix Pharmaceuticals Announces Issuance of U.S. Patent for Compositions and Uses of Tianeptine Oxalate Salt, the Active Ingredient of TNX-601 CR

CHATHAM, N.J., March 19, 2021 (GLOBE NEWSWIRE) -- Tonix Pharmaceuticals Holding Corp. (Nasdaq: TNXP) (Tonix or the Company), a clinical-stage biopharmaceutical company, today announced that the U.S. Patent and Trademark Office issued U.S. Patent No. 10,946,027 to the Company on March 16, 2021. Tianeptine oxalate is the active pharmaceutical ingredient of Tonix's development candidate, TNX-601 CR (tianeptine oxalate and naloxone controlled-release tablet). The new patent, "Tianeptine Oxalate Salts and Polymorphs," includes claims directed to pharmaceutical compositions comprising crystalline tianeptine oxalate salts, to methods of using those compositions to treat various disorders, and to methods of producing the oxalate salts. This patent is expected to provide Tonix with U.S. market exclusivity until December 28, 2037, excluding any patent term extensions.

Tonix's TNX-601 CR is a novel oral formulation of one of the claimed tianeptine oxalate salts, which is being developed as a potential treatment for major depressive disorder (MDD), posttraumatic stress disorder and neurocognitive dysfunction associated with corticosteroid use. Tianeptine sodium (amorphous) immediate release (IR) has been available in Europe for the treatment of depression for more than three decades, first marketed in France in 1989. Tianeptine sodium IR is also marketed in many countries in Asia and Latin America. No tianeptine-containing product has been approved by the U.S. Food and Drug Administration (FDA).

TNX-601 CR is designed for once daily dosing, which is believed to provide an adherence advantage relative to the three times per day, or *t.i.d.* dosing, of the immediate-release tianeptine sodium salt products available in Europe and other jurisdictions around the world. The crystalline tianeptine oxalate of the patented compositions is believed to provide improved stability, consistency, and manufacturability as compared to the amorphous sodium salt.

"We are pleased with the issuance of the new patent that protects pharmaceutical compositions and uses of salts of tianeptine oxalate," said Seth Lederman, M.D., President and Chief Executive Officer of Tonix Pharmaceuticals. "We believe that the expected period of patent protection, together with the scope and term of our earlier U.S. patents directed to tianeptine and its salts, warrants the further development of tianeptine for the U.S. market. The mechanism of TNX-601 CR in treating depression is distinct from any other antidepressant available in the U.S."

“The issuance of this patent is the fruit of Tonix’s internal discovery efforts,” said Siobhan Fogarty, Executive Vice President of Product Development of Tonix Pharmaceuticals. “We believe the physiochemical properties of the crystalline oxalate salt are superior to the amorphous sodium salt marketed in Europe and other parts of the world, and together with our controlled-release technology will provide a once-daily dosage product.”

Tianeptine indirectly modulates the glutamatergic pathway via altered AMPA and NMDA receptor neurotransmission, and plays a role in promoting brain neuroplasticity under conditions of stress or corticosteroid use. Tonix has added naloxone to the TNX-601 CR tablet as a deterrent to parenteral abuse, because tianeptine is a weak mu-opioid receptor agonist and has been linked to illicit misuse at much higher doses than those reported to be effective in the treatment of MDD.

**Tonix Pharmaceuticals Holding Corp.**

Tonix is a clinical-stage biopharmaceutical company focused on discovering, licensing, acquiring and developing small molecules and biologics to treat and prevent human disease and alleviate suffering. Tonix’s portfolio is primarily composed of central nervous system (CNS) and immunology product candidates. The CNS portfolio includes both small molecules and biologics to treat pain, neurologic, psychiatric and addiction conditions. Tonix’s lead CNS candidate, TNX-102 SL[1], is in mid-Phase 3 development for the management of fibromyalgia, and positive data on the RELIEF Phase 3 trial were recently reported. The Company expects interim data from a second Phase 3 study, RALLY, in the third quarter of 2021 and topline data in the fourth quarter of 2021. The immunology portfolio includes vaccines to prevent infectious diseases and biologics to address immunosuppression, cancer, and autoimmune diseases. Tonix’s lead vaccine candidate, TNX-1800[2], is a live replicating vaccine based on the horsepox viral vector platform to protect against COVID-19, primarily by eliciting a T cell response. Tonix reported positive efficacy data from animal studies of TNX-1800 in the first quarter of 2021. TNX-801[2], live horsepox virus vaccine for percutaneous administration, is in development to protect against smallpox and monkeypox.

[1]TNX-102 SL is an investigational new drug and has not been approved for any indication.
[2]TNX-1800 and TNX-801 are investigational new biologics and have not been approved for any indication.

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, risks related to failure to obtain FDA clearances or approvals and noncompliance with FDA regulations; delays and

uncertainties caused by the global COVID-19 pandemic; risks related to the timing and progress of clinical development of our product candidates; 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 substantial competition. 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, 2020, as filed with the Securities and Exchange Commission (the "SEC") on March 15, 2021, and periodic reports filed with the SEC on or after the date thereof. All 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 thereof.

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