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Tonix Pharmaceuticals Announces Issuance of U.S. Patent Covering the Subcutaneous Delivery of FDA-Approved Zembrace® SymTouch® to Treat Migraines

New patent expected to provide market exclusivity into 2036

Zembrace® SymTouch® (sumatriptan succinate injection) 10mg is indicated for the acute treatment of migraine in adults

CHATHAM, N.J., Sept. 27, 2024 (GLOBE NEWSWIRE) -- Tonix Pharmaceuticals Holding Corp. (Nasdaq: TNXP) (Tonix or the Company), a fully-integrated biopharmaceutical company with marketed products and a pipeline of development candidates, today announced that the United States Patent and Trademark Office issued U.S. Patent No. 12,097,183 to the Company on September 24, 2024. The patent, entitled "Pharmaceutical Composition for Treating Migraine", claims use of a pre-filled autoinjector comprising a composition of Zembrace® SymTouch® for treating migraines via subcutaneous administration. This patent, excluding possible patent term extensions, is expected to provide protection into 2036.

"We are excited to announce the issuance of this additional patent, providing additional protection for our exclusive marketing and sale of FDA-approved Zembrace® for the treatment of migraines," said Seth Lederman, M.D., Chief Executive Officer of Tonix Pharmaceuticals. "We believe Zembrace® is a compelling non-oral option for people who suffer with migraines."

Tonix recently launched a new educational campaign, "Does Your Migraine Pill Work Every Time?" The goal of the campaign is to educate patients and their healthcare providers on the benefits of non-oral migraine medications including nasal and injectable treatment options. Non-oral migraine medications, such as injectables and nasal sprays, do not rely on the digestive system to be absorbed and can offer the potential for faster relief from migraine symptoms in as little as 10 minutes.

Migraine often requires patients to advocate for themselves to develop an effective migraine treatment plan. Empowering patients to understand why they are experiencing delayed or inconsistent relief from oral medications and educating them on other migraine treatment options could ultimately improve their management of migraine symptoms and ultimately enhance their quality of life.

For example, gastroparesis is common before, during, and sometimes in between migraine

attacks. Gastroparesis can slow or even block the absorption of oral medications causing delayed, incomplete, or no migraine symptom relief. Tonix will launch a new disease education website, www.gpmigraine.com, for patients who want to learn more about gastroparesis and migraine and why their oral medications do not work.

Dr. Lederman continued, “Tonix is dedicated to educating patients and their healthcare providers on gastroparesis and how non-oral medicines including nasal and injectable medications can help patients manage their migraines. We hope to inspire patients to optimize their migraine treatment plan with non-oral medications.”

About Migraine

Nearly 40 million people in the United States suffer from migraine[1] and it has been recognized as the second leading cause of disability in the world[2,3]. Migraine is characterized by debilitating attacks lasting four to 72 hours with multiple symptoms, including pulsating headaches of moderate to severe pain intensity often associated with nausea or vomiting, and/or sensitivity to sound (phonophobia) and sensitivity to light (photophobia)[4].

[1]Law, H. Z., Chung, M. H., Nissan, G., Janis, J. E., &Amirlak, B. (2020). Hospital Burden of Migraine in United States Adults: A 15-year National Inpatient Sample Analysis. Plastic and reconstructive surgery. Global open, 8(4), e2790. https://doi.org/10.1097/GOX.0000000000002790

[2]GBD 2016 Headache Collaborators. Global, regional, and national burden of migraine and tension-type headache, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet Neurol 2018;17(11):954-976.

[3]Steiner, T.J., Stovner, L.J., Jensen, R. et al.Lifting the Burden: the Global Campaign against Headache. Migraine remains second among the world's causes of disability, and first among young women: findings from GBD2019. J Headache Pain 21, 137 (2020).

[4]Headache Classification Committee of the International Headache Society (IHS). The international classification of headache disorders, 3rd edition. Cephalalgia. 2018;38(1):1–211.

Tonix Pharmaceuticals Holding Corp.*

Tonix is a fully integrated biopharmaceutical company focused on transforming therapies for pain management and modernizing solutions for public health challenges. Tonix’s development portfolio is focused on central nervous system (CNS) disorders, and its priority is to submit a New Drug Application (NDA) to the FDA in October 2024 for TNX-102 SL, a product candidate for which two statistically significant Phase 3 studies have been completed for the management of fibromyalgia. The FDA has granted Fast Track designation to TNX-102 SL for the management of fibromyalgia. TNX-102 SL is also being developed to treat acute stress reaction. Tonix’s CNS portfolio includes TNX-1300 (cocaine esterase), a biologic in Phase 2 development designed to treat cocaine intoxication that has Breakthrough Therapy designation. Tonix’s immunology development portfolio consists of biologics to address organ transplant rejection, autoimmunity and cancer, including TNX-

1500, which is a humanized monoclonal antibody targeting CD40-ligand (CD40L or CD154) being developed for the prevention of allograft rejection and for the treatment of autoimmune diseases. Tonix also has product candidates in development in the areas of rare disease, including TNX-2900 for Prader-Willi syndrome, and infectious disease, including a vaccine for mpox, TNX-801. Tonix recently announced the U.S. Department of Defense (DoD), Defense Threat Reduction Agency (DTRA) awarded it a contract for up to $34 million over five years in an Other Transaction Agreement (OTA) to develop TNX-4200, small molecule broad-spectrum antiviral agents targeting CD45 for the prevention or treatment of infections to improve the medical readiness of military personnel in biological threat environments. Tonix owns and operates a state-of-the art infectious disease research facility in Frederick, MD, instrumental in progressing this development. Tonix Medicines, our commercial subsidiary, markets Zembrace® SymTouch® (sumatriptan injection) 3 mg and Tosymra® (sumatriptan nasal spray) 10 mg for the treatment of acute migraine with or without aura in adults.

*Tonix's product development candidates are investigational new drugs or biologics and have not been approved for any indication.

Zembrace SymTouch and Tosymra are registered trademarks of Tonix Medicines. All other marks are property of their respective owners.

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 the failure to obtain FDA clearances or approvals and noncompliance with FDA regulations; risks related to the failure to successfully market any of our products; 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, 2023, as filed with the Securities and Exchange Commission (the "SEC") on April 1, 2024, and periodic reports filed with the SEC on or after the date thereof. 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 thereof.

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Indication/Limitations of Use

ZEMBRACE® SymTouch® (sumatriptan succinate) and TOSYMRA® (sumatriptan spray) are indicated for the acute treatment of migraine with or without aura in adults. ZEMBRACE SymTouch and TOSYMRA should only be used where a clear diagnosis of migraine has been established. ZEMBRACE SymTouch and TOSYMRA are not indicated for the prevention of migraine attacks or for the treatment of cluster headache.

Important Safety Information CONTRAINDICATED IN PATIENTS WITH:

- Ischemic coronary artery disease (CAD) or coronary artery vasospasm, including Prinzmetal's angina
- Wolff-Parkinson-White syndrome or arrhythmias associated with other cardiac accessory conduction pathway disorders
- History of stroke, transient ischemic attack (TIA), or hemiplegic or basilar migraine
- Peripheral vascular disease
- Ischemic bowel disease
- Uncontrolled hypertension
- Recent (i.e., within 24 hours) use of ergotamine-containing or ergot-type medication, or another 5-HT_1 agonist
- Concurrent or recent (within 2 weeks) use of a MAO-A inhibitor
- Hypersensitivity to sumatriptan (angioedema and anaphylaxis seen)
- Severe hepatic impairment

WARNINGS AND PRECAUTIONS

- Myocardial ischemia/infarction, Prinzmetal's angina: These events may occur even in patients without known cardiovascular disease. Perform cardiac evaluation in triptan-naïve patients with multiple risk factors and, if satisfactory, administer first dose of

ZEMBRACE SymTouch and TOSYMRA in a medically-supervised setting

- Arrhythmias: Life-threatening disturbances of cardiac rhythm, including ventricular tachycardia and ventricular fibrillation leading to death, have been reported within a few hours following the administration of 5-HT_1 agonists. Discontinue ZEMBRACE SymTouch and TOSYMRA if these disturbances occur
- Sensations of chest/throat/neck/jaw pain, tightness, pressure, or heaviness: Commonly occur after treatment with 5-HT_1 agonists and are usually non-cardiac in origin. Perform a cardiac evaluation in patients with cardiac risk
- Cerebrovascular Events: Cerebral hemorrhage, subarachnoid hemorrhage, and stroke have occurred in patients treated with 5-HT_1 agonists, and some have resulted in fatalities. Discontinue ZEMBRACE SymTouch and TOSYMRA if a cerebrovascular event occurs. Before treating headaches in patients not previously diagnosed as migraineurs, and in migraineurs who present with atypical symptoms, exclude other potentially serious neurological conditions
- Other Vasospasm Reactions: 5-HT_1 agonists, including ZEMBRACE SymTouch and TOSYMRA, may cause non-coronary vasospastic reactions, such as peripheral vascular ischemia, gastrointestinal vascular ischemia and infarction, splenic infarction, and Raynaud's syndrome. In patients who experience symptoms or signs suggestive of a vasospastic reaction following the use of any 5-HT_1 agonist, rule out a vasospastic reaction before using ZEMBRACE SymTouch and TOSYMRA
- Medication Overuse Headache: Overuse of acute migraine drugs may lead to exacerbation headache (medication overuse head- ache). Detoxification of patients, including withdrawal of the overused drugs, and treatment of withdrawal symptoms may be necessary
- Serotonin Syndrome: May occur with triptans, including ZEMBRACE SymTouch and TOSYMRA, particularly during co-administration with selective serotonin reuptake inhibitors (SSRIs), serotonin norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants (TCAs), and monoamine oxidase inhibitors (MAOIs). The onset of symptoms usually occurs within minutes to hours of receiving a new or greater dose of a serotonergic medication. Discontinue ZEMBRACE SymTouch and TOSYMRA if serotonin syndrome is suspected
- Increases in Blood Pressure: Significant elevation in blood pressure, including hypertensive crisis with acute impairment of organ systems, has been reported in patients treated with 5-HT_1 agonists. Monitor blood pressure in patients treated with ZEMBRACE SymTouch and TOSYMRA
- Hypersensitivity Reactions: Hypersensitivity reactions, including angioedema and anaphylaxis, have occurred in patients receiving sumatriptan. Such reactions can be life threatening or fatal. ZEMBRACE SymTouch and TOSYMRA are contraindicated in patients with a history of hypersensitivity reaction to sumatriptan
- Seizures: Seizures have been reported following administration of sumatriptan, with or without predisposing factors. ZEMBRACE SymTouch and TOSYMRA should be used with caution in patients with a history of epilepsy or conditions associated with a lowered seizure threshold
- Local Irritation (TOSYMRA only): Local irritative symptoms were reported in

approximately 46% of patients with TOSYMRA in an open-label trial which allowed repeated use of TOSYMRA over the course of 6 months. The most common of which were application site reaction (eg., burning sensations in the nose), dysgeusia, and throat irritation. Approximately 0.5% of the cases were reported as severe.

ADVERSE REACTIONS

The most common adverse reactions (≥5% and > placebo) were injection site reactions (ZEMBRACE SymTouch only), tingling, dizziness/vertigo, warm/hot sensation, burning sensation, feeling of heaviness, pressure sensation, flushing, feeling of tightness, and numbness/paresthesia.

To report SUSPECTED ADVERSE REACTIONS, contact TONIX Medicines, Inc, at 1-888-869-7633 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

Please see the full Prescribing Information, including Instructions for Use, for ZEMBRACE SymTouch and TOSYMRA.

Source: Tonix Pharmaceuticals Holding Corp.