



Pharmaceutical uses of heterocyclic and triazolopyrimidione

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Market Needs: According to the International Diabetes Federation (IDF), the number of people with diabetes worldwide reached 425 million in 2017, an increase of 10 million from 2015, and is expected to increase to 693 million by 2045. At the end of 2014, the number of diabetic patients reached 2.2 million, with the fastest growth among the elderly over 65 years old.

Our Technology: The polyunsaturated fatty acid 15-keto-PGE₂, a natural endogenous ligand derived from PGE₂, can activate PPAR γ , the administration of 15-keto-PGE₂ indeed markedly improves insulin sensitivity and prevents diet-induced obesity in mice. However, prostaglandin reductase 2 (PTGR2) can catalyze the reduction of 15-keto-PGE₂ and render it to become an inactive metabolite 13,14-dihydro-15-keto-PGE₂. Notably, 15-keto-PGE₂ level is increased in PTGR2 knockout mice and these PTGR2 knockout mice were protected from diet-induced obesity, insulin resistance, and hepatic steatosis without fluid retention nor reduced bone mineral density. The present invention is based on a discovery that triazolopyrimidione derivatives are effective in modulating PTGR2's enzymatic and cellular activities, improving glucose tolerance and insulin sensitivity while treating obesity and insulin-resistance mice.

Strength: The first-generation glitazone (thiazolidinedione), PPAR γ insulin sensitizer was discontinued due to possible hepatic failure and the second-generation GlaxoSmithKline's Avandia (rosiglitazone) and Takeda's Actos (pioglitazone) are currently on the market. Although their hepatotoxicities are extremely low, reports of hepatotoxicity are still some. Avandia is concerned about myocardial infarction, so there are stricter restrictions on its use. According to the Globaldata database query, there are currently 10 PPAR γ insulin sensitizer drugs under development in the field of metabolic diseases. Among them, Chiglitazar was developed by Shenzhen Chipscreen has entered the pre-registration stage in China. Only one drug, saroglitazar, is currently in Phase III clinical trials, was developed by Cadila Healthcare and launched in India in 2013 for the treatment of hypertriglyceridemia, and is currently in Phase III clinical trials for the type 2 diabetes indication. However, nowadays, no drugs have been developed against prostaglandin reductase 2 (PTGR2, ZADH1) inhibitors.

Competing Products: In the U.S. type 2 diabetes drug market in 2016, TZD drugs accounted for only 6% of the type 2 diabetes drug market. The GLP-1 receptor agonist and SGLT2 inhibitor are This information herein is intended for potential license of NTU technology only. Other usage of all or portion of this information in whatever form or means is strictly prohibited. Kindly contact us and we will help to achieve your goal the best we can.

expected to grow by 2026 in response to the trend of combination therapy of type 2 diabetes drugs, the expiry of patent drugs, and the rise of generic drugs significantly. However, TZD drugs are due to their side effects such as blood vessels will affect its drug sales.

Intellectual Properties:

None

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