

SUBSTITUTED PIPERIDYL-ETHYL-PYRIMIDINE AS GHRELIN O-ACYL TRANSFERASE INHIBITOR

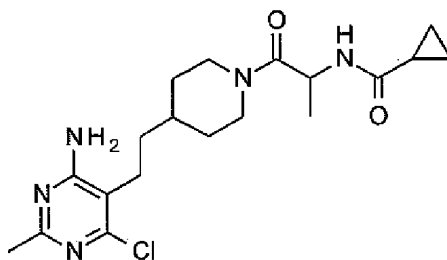
The present invention relates to a compound useful for inhibiting ghrelin O-acyl
5 transferase (GOAT), pharmaceutical compositions and methods for treating diseases
related to GOAT activity.

GOAT belongs to the membrane-bound O-acyl transferase (MBOAT) family of
enzymes. It converts desacyl-ghrelin (also known as unacylated ghrelin or UAG) to a
biologically active form, acyl-ghrelin (AG), by transferring a fatty acid to the Ser3
10 residue of the desacylghrelin peptide. Acyl-ghrelin has been shown to increase food
intake and increase adiposity in humans and in rodents. Infusion of AG in humans has
also been shown to suppress glucose-induced insulin secretion. Elimination of the ghrelin
gene has been shown to enhance insulin release to prevent or ameliorate glucose
intolerance in high-fat diet fed ob/ob mice.

The prevalence of obesity and diabetes coupled with the variable effectiveness
15 and responses to current treatments for obesity and diabetes necessitate that more
treatment choices be available to patients. A GOAT inhibitor is believed to be a useful
agent in the treatment of obesity. It is further believed that a GOAT inhibitor may also be
useful in reducing weight gain or weight regain as an adjunct to diet and/or exercise, other
20 therapeutic medicinal agents or procedures designed to reducing weight gain or treat
obesity. Similarly, a GOAT inhibitor may be useful in treating type 2 diabetes, singly or
in combination with other treatments for type 2 diabetes.

Summary

In one aspect of the present disclosure, there is provided a compound of formula



25 or a pharmaceutically acceptable salt thereof.

In another aspect of the present disclosure, there is provided a pharmaceutical composition comprising a compound as described herein, or a pharmaceutically acceptable salt thereof, and one or more pharmaceutically acceptable carriers, diluents, or excipients.

5 In yet another aspect of the present disclosure, there is provided a compound as described herein, or a pharmaceutically acceptable salt thereof, for use in therapy.

In a further aspect of the present disclosure, there is provided a compound as described herein, or a pharmaceutically acceptable salt thereof, for use in reducing weight gain.

10 In another aspect of the present disclosure, there is provided a compound as described herein, or a pharmaceutically acceptable salt thereof, for use in reducing weight regain.

In yet another aspect of the present disclosure, there is provided a compound as described herein, or a pharmaceutically acceptable salt thereof, for use in treating obesity.

15 In a further aspect of the present disclosure, there is provided a compound as described herein, or a pharmaceutically acceptable salt thereof, for use in treating type 2 diabetes.

In another aspect of the present disclosure, there is provided a use of a compound as described herein, or a pharmaceutically acceptable salt thereof, in the manufacture of a
20 medicament for reducing weight gain.

In yet another aspect of the present disclosure, there is provided a use of a compound as described herein, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for reducing weight regain.

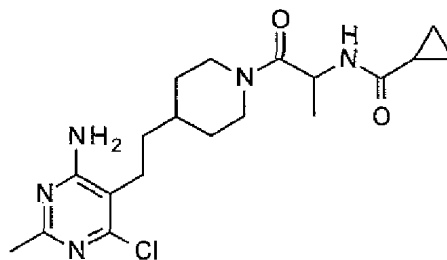
25 In a further aspect of the present disclosure, there is provided a use of a compound as described herein, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating type 2 diabetes.

In another aspect of the present disclosure, there is provided a use of a compound as described herein, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating obesity.

30 **Description**

The present invention provides a compound that is a GOAT inhibitor. In particular, the present invention provides a compound of formula

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or a pharmaceutically acceptable salt thereof.

The present invention further provides a compound that is a GOAT inhibitor of formula

5. A pharmaceutical composition according to Claim 4 comprising one or more other therapeutic agents.

5 6. A compound according to any of Claims 1 to 3, or a pharmaceutically acceptable salt thereof, for use in therapy.

7. A compound according to any of Claims 1 to 3, or a pharmaceutically acceptable salt thereof, for use in reducing weight gain.

10 8. A compound according to any of Claims 1 to 3, or a pharmaceutically acceptable salt thereof, for use in reducing weight regain.

9. A compound according to any of Claims 1 to 3, or a pharmaceutically acceptable salt thereof, for use in treating obesity.

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10. A compound according to any of Claims 1 to 3, or a pharmaceutically acceptable salt thereof, for use in treating type 2 diabetes.

5 11. The use of a compound of any of Claims 1 to 3, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for reducing weight gain.

12. The use of a compound of any of Claims 1 to 3, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for reducing weight regain.

10 13. The use of a compound of any of Claims 1 to 3, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating type 2 diabetes.

15 14. The use of a compound of any of Claims 1 to 3, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating obesity.