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[54] **N-SUBSTITUTED PIPERAZINE NONOATES**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 17,270, Feb. 12, 1993, and Ser. No. 950,637, Sep. 23, 1992, Pat. No. 5,366,997, which is a continuation-in-part of Ser. No. 764,908, Sep. 24, 1991, abandoned, said Ser. No. 17,270, is a division of Ser. No. 743,892, Aug. 12, 1991, Pat. No. 5,208,233, which is a continuation-in-part of Ser. No. 409,552, Sep. 15, 1989, Pat. No. 5,039,705.

[51] **Int. Cl.**[6] **C07D 241/04**

[52] **U.S. Cl.** **544/382**; 544/358; 544/359; 544/360; 544/390

[58] **Field of Search** 544/382, 358, 544/359, 360, 390; 514/255

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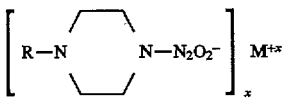
[57] **ABSTRACT**

There are disclosed N-substituted piperazine NONOate compounds having the structure:



(I)

wherein M is a pharmaceutically acceptable cation, x is the valence of the cation, and R is selected from the group consisting of: an unsubstituted or substituted C_1–C_{20} straight chain alkyl, an unsubstituted or substituted C_3–C_{20} branched chain alkyl,an unsubstituted or substituted C_2–C_{20} straight chain alkenyl, an unsubstituted or substituted C_3–C_{20} branched chain alkenyl, a group of formula,

$$R^1-\overset{\overset{\displaystyle O}{\|}}{C}-,$$

a group of formula,

$$R^2-\underset{\underset{\displaystyle R^3}{|}}{\overset{\overset{\displaystyle O}{\|}}{P}}-,$$

a group of formula R^4—SO_2—, or a group of formula R^5—O—N=N(O)—. The compounds are potent nitric oxide releasing compounds.

6 Claims, No Drawings