

PATENT SPECIFICATION

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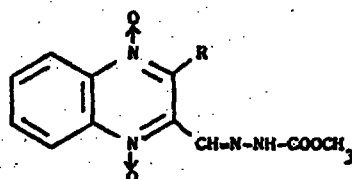


(54) N-METHOXYCARBONYL-N'-SULFONYLHYDRAZINES

(71) We, PFIZER INC., a Corporation organised under the laws of the State of Delaware, United States of America, of 235 East 42nd Street, New York, State of New York, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

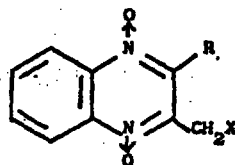
The invention relates to novel N-methoxycarbonyl-N'-sulfonylhydrazines for use in preparing 3-(2-quinoxalinylmethylene)carbazate-N¹,N⁴-dioxides with useful antibacterial properties and/or with growth promotant properties in animals.

According to our application no. 20800/77 (Serial no 1591872) a process for preparing a methyl 3-(2-quinoxalinylmethylene)carbazate N¹,N⁴-dioxide of the formula:



--- (I)

wherein R is hydrogen, alkyl, hydroxyalkyl, alkanoyl, benzoyl or -CONR¹R² wherein R¹ and R² are each hydrogen, alkyl, hydroxyalkyl or aminoalkyl, any such alkyl, hydroxyalkyl or aminoalkyl group containing 1 to 6 carbon atoms and any such alkanoyl group containing 2 to 7 carbon atoms, comprises reacting a compound of the formula:



--- (II)

wherein R is as defined above and X is chlorine or bromine, with a compound of the formula:



--- (III)

wherein R³ is an aliphatic or aromatic sulphonyl group, in a reaction-inert solvent, in the presence of anhydrous potassium carbonate.

Some of the compounds of the formula III are the subject of claims in British Patent No. 1505120.

The present invention provides compounds of the formula III where R³ is a trifluoromethane or 2,2,2-trifluoroethane sulphonyl group.

The trifluoromethane sulphonyl (CF₃SO₂) and 2,2,2-trifluoroethane sulphonyl (CF₃CH₂SO₂) groups are commonly known as the trifyl and tresyl groups respectively. The preferred compound of formula (III) is that in which R³ is trifyl, i.e. N-methoxycarbonyl-N'-trifyl-hydrazine.

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Compounds of formula (I) in which R is hydrogen or alkyl containing 1 to 6 carbon atoms are described and claimed in British Patent Specification No. 1058047, while those in which R is $-\text{CONR}^1\text{R}^2$ are described and claimed in British Patent Specification No. 1365441.

The compounds of formula (III) are prepared by the general procedures described in J. Org. Chem. 40, 3450 (1975) and United States Patent No. 3925270 (1975). For example, N-methoxycarbonyl-N'-triflylhydrazine is prepared by adding a solution of triflic anhydride in methylene chloride dropwise to a methylene chloride solution containing an equimolar amount of methyl carbazate and a slight molar excess of triethylamine at -78°C . The resulting mixture is allowed to warm to room temperature and stirred for about 16 hours. The mixture is concentrated under vacuum at room temperature and the residue is then extracted with several portions of ether. The ether extract is concentrated under vacuum at room temperature to a waxy solid that is used directly in the subsequent reaction without further purification. Alternatively, the omission of triethylamine and the use of two molar equivalents of methyl carbazate yields the crystalline product.

The following examples illustrate the preparation of compounds of formula (III) according to the invention.

EXAMPLE I

N-Methoxycarbonyl-N'-triflylhydrazine

(A) Triflic anhydride (35.4 mmoles) in methylene chloride (40 ml) was added dropwise to a solution of methyl carbazate (35.5 mmoles) and triethylamine (38.9 mmoles) in methylene chloride (200 ml) at -78°C . with stirring. The resulting mixture was allowed to warm to room temperature and stirred for 16 hours. The mixture was concentrated at room temperature under vacuum and the residue was extracted with three 100 ml portions of refluxing ether. The combined ether extract was concentrated under vacuum at room temperature to yield a waxy solid (5.26 g., ca. 67%). The nmr spectrum of the crude product was consistent with the expected product contaminated with the triethylamine salt of triflic acid. The crude material was used directly without further purification for subsequent reactions.

(B) Methyl carbazate (336 mmoles) was added over a 20 minute period with stirring to a solution of triflic anhydride (178 mmoles) in methylene chloride (2000 ml) under a nitrogen atmosphere at -78°C . The resulting solution was allowed to warm to room temperature and stirred for 20 hours. The resulting thick white suspension was concentrated under vacuum at room temperature to give a white solid. This material was triturated with diethyl ether (450 ml) and collected to give the methyl carbazate salt of triflic acid. The diethyl ether filtrate was concentrated under vacuum at room temperature to give a white solid which was triturated with hexane, collected, washed with hexane and dried to give the product as a white crystalline solid (yield, 84%) mp $107-109^\circ\text{C}$.

Analysis

Calc'd for $\text{C}_3\text{H}_5\text{O}_4\text{N}_2\text{F}_3\text{S}$: C, 16.21; H, 2.25; N, 12.61%

Found: C, 16.24; H, 2.20; N, 12.68%

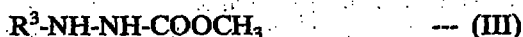
EXAMPLE II

N-Methoxycarbonyl-N'-tresylhydrazine

The method of Example I may be repeated employing tresyl chloride in place of triflic anhydride.

WHAT WE CLAIM IS:-

1. A compound of the formula:



wherein R^3 is a trifluoromethane or 2,2,2-trifluoroethane sulphonyl group.

2. N-Methoxycarbonyl-N'-triflylhydrazine.
3. N-Methoxycarbonyl-N'-tresylhydrazine.

P.C.C. GRAHAM,
Chartered Patent Agent,
Agent for the Applicants.

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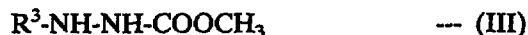
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