

NOTES

Potential Antitubercular Agents, Part I: 4-Thiazolidinone Derivatives

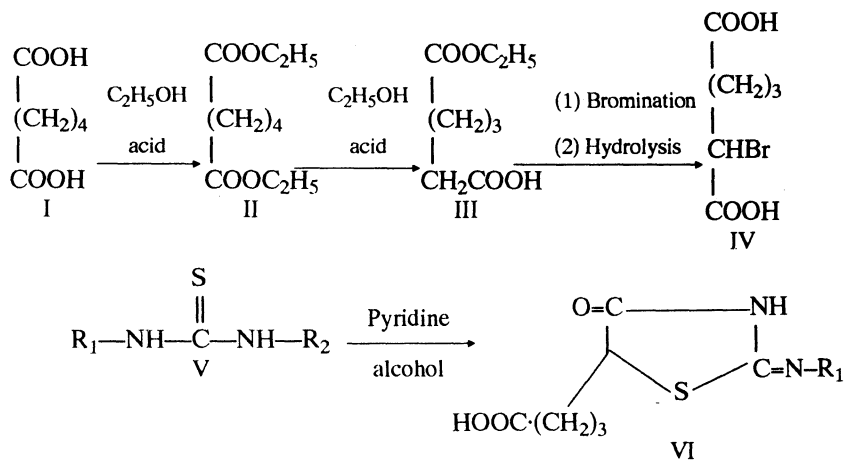
ANJANI SOLANKEE*, KISHOR KAPADIA and J.M. TUREL

*Department of Chemistry**B.K.M. Science College, Valsad-396 001, India*

4-Thiazolidinones have been prepared by condensing α -bromoadipic acid with different thioureas. The 4-thioazolidinones have been tested for antitubercular activity using H₃₇R_V strain of bacteria

4-Thiazolidinones have been found to exhibit antitubercular activity¹. The nucleus is also active as hypnotic², anti convulsant³ and antifungal⁴. Phenyl urea derivatives show central myorelaxant effect⁵, motor-incoordinating activity, antieorazol⁶ and anticonvulsive⁷⁻¹⁰ activities.

For the preparation of 2-phenyl-amino-5-(ω -carboxy propyl)-4-thiazolidinones(VI), the thioureas have been prepared with different aromatic and aliphatic hydrochlorides and then condensed with α -bromo-adipic acid in ethanol i.p.o. pyridine as catalyst. When tested, these compounds showed antitubercular activity.



All melting points are uncorrected. IR spectra of the title compounds were taken on a Perkin Elmer 237 grating spectrophotometer. The strong bands are at 1750 cm⁻¹, 1640 cm⁻¹ for thiazolidinone ring-system.

Preparation of Diester of Adipic Acid¹¹ (II), Monoester of Adipic Acid¹² (III), α -Bromoadipic Acid¹³ (IV) and Thiourea (V)

To the solution of aryl amine hydrochloride (0.1 M) in ethanol (25 ml) was

added potassium thiocyanate (0.1 M). The contents were heated to reflux for 4 hrs, filtered hot and worked out to get the corresponding thiourea.

Preparation of 2-Phenyl-Imino-5-(ω -Carboxy Propyl)-4-Thiazolidinones(VI)

Thiourea (0.04 M), absolute alcohol (50 ml), α -bromo-adipic acid (0.04 M) and pyridine (0.025 M, AR grade) were heated to reflux for 4 hrs. The solvent was evaporated and the residue was treated with sodium bicarbonate solution (50 ml) and filtered. The filtrate was adjusted to pH 2 to 2.5 by hydrochloric acid AR grade. The thiazolidinones were crystallised from ethanol.

Antitubercular Activity

Total fifteen compounds were tested for antitubercular activity by using H₃₇R_v strain of bacteria.

Sr. No.	R	Activity in micrograms per ml
1.	-H	Inactive
2.	-C ₆ H ₅	Inactive
3.	- <i>o</i> -C ₆ H ₄ Cl	200
4.	- <i>m</i> -C ₆ H ₄ Cl	100
5.	- <i>p</i> -C ₆ H ₄ Cl	100
6.	- <i>o</i> -C ₆ H ₄ CH ₃	Inactive
7.	- <i>m</i> -C ₆ H ₄ CH ₃	Inactive
8.	- <i>p</i> -C ₆ H ₄ CH ₃	Inactive
9.	- <i>m</i> -C ₆ H ₄ OCH ₃	Inactive
10.	- <i>p</i> -C ₆ H ₄ OCH ₃	Inactive
11.	- <i>p</i> -C ₆ H ₄ OC ₃ H ₇	20
12.	- <i>p</i> -C ₆ H ₄ OC ₃ H ₇	10
13.	- <i>p</i> -C ₆ H ₄ OC ₄ H ₉	10
14.	-1-C ₁₀ H ₇	40
15.	-2-C ₁₀ H ₇	10

Standard drugs

Sr. No.	Name	Minimum inhibitory conc. in micrograms per ml
1.	INH	0.04
2.	Streptomycin	1.00

REFERENCES

1. N.M. Furkevich, L.Y. Ladnaya, I.V. Pleshner and O.L. Grom, *Khim. Issled. Farm.*, 64, (1970), *Chem. Abstr.* 76, 34154n, (1972).

2. W.J. Doran and H.A. Shonle, *J. Org. Chem.*, **3**, 193 (1938).
3. H.D. Troutmann and L.M. Long, *J. Am. Chem. Soc.*, **70**, 3436 (1948).
4. J. Kinugawa and K. Nagase, Japanese Patent, 8542 (65); *Chem. Abstr.*, **63**, 5653 (1965).
5. V. Georgiev, *Compt. Rend. Acad. Bulgare Sci.*, **17**, 1133 (1964); *Chem. Abstr.*, **62**, 9650 (1965).
6. V. Georgiev and O. Vassileva, *Compt. Rend. Acad. Bulgare Sci.*, **17**, 1129 (1964); *Chem. Abstr.*, **63**, 2242h (1965).
7. V. Georgiev, *Compt. Rend. Acad. Bulgare Sci.*, **18**, 883 (1965); *Chem. Abstr.*, **64**, 14808 (1966).
8. _____, *Compt. Rend. Acad. Bulgare Sci.*, **18**, 1059 (1965); *Chem. Abstr.*, **64**, 4101f (1966).
9. _____, *Izv. Inst. Fiziol., Bulgare Akad. Nauk.*, **9**, 115 (1965); *Chem. Abstr.*, **65**, 1256 (1966).
10. _____, *Izv. Inst. Fiziol., Bulgare Akad. Nauk.*, **10**, 121 (1966); *Chem. Abstr.*, **67**, 31328a (1967).
11. V.M. Micovic, *Org. Syn. Collective Vol. II*, 264 (1963), John Wiley & Sons, Inc., London.
12. V.M. Tursin, L.G. Chebotareva and A.S. Sadkov, *Med. Prom. S.S.S.R.*, **16**, 22 (1962).
13. L. Otzet, J. Pascuala and J. Vaider, *An. Real Soc., Espan. Fis. Quim. Ser. B*, **63**, 479 (1967).

(Received: 15 October 1992; Accepted: 15 May 1993)

AJC-620