Transformations of Aldimines Derived from Pyrrole-2-carbaldehyde. Synthesis of Thiazolidino-Fused Compounds

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Received December 28, 2000

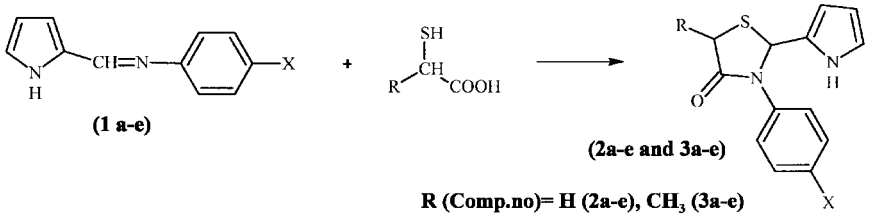
4-Thiazolidinones which are hetarylsubstituted at the 2-position were prepared by the reaction of mercapto acids with aldimines which were prepared by the condensation of pyrrole-2-carbaldehyde with different aromatic amines. After their benzylidene derivatives were obtained, we first applied the Wittig reagent on them in the presence of triethylamine, dihydrofurothiazolidines were synthesized. Second, we prepared new pyrazolinothiazolidines by using phenylhydrazine in the presence of sodium acetate. All mentioned compounds have been characterized by their spectral data, and screened for their antimicrobial activities. Some of them exhibit moderate to good antibacterial and tuberculostatic activities.

Keywords : Pyrrole-2-carbaldehyde, 4-thiazolidinone, Benzylidene derivatives, Dihydrofurothiazolidines, pyrazolinothiazolidines.

Aldimines have been generally used as substrates in the formation of a large number of industrial compounds *via* cycloaddition, ring closure, replacement reactions, etc.[1,2] In addition, the aldimines of heterocyclic carbaldehydes, which are widely used in the production of pharmaceuticals, have taken an important place among the compounds of biological interest because of the conjugation and the groups that they contain within their molecules. Furthermore, most of the 4-thiazolidinones and their benzylidene derivatives display a large variety of activities such as antibiotic, diuretic, organoleptic, tuberculostatic, antileukemik and antiparasitical.[3,4] To our knowledge, little is known on fused thiazolidines known to possess these activities.[5] Moreover, little attention has been directed to the behaviour of this class of compounds toward phosphorus reagents.[6,7] Our continuous interest in the preparation and study of reactions of 4-thiazolidinones[8,9] prompted us to examine the behaviour of 5-benzylidene-3-aryl-2-(2-pyrrolyl)-4-thiazolidinones toward phosphonium ylide or phenylhydrazine under varied conditions to determine their cyclization reactions for possible biological activities of new compounds.

For a long time imines have been used successfully in the synthesis of nitrogen containing heterocycles.[10] As part of ongoing project aimed at the discovery of bioactive 4-thiazolidinones we employed the Schiff bases, **1a-e** toward their synthesis. These azomethines have been obtained by the reaction of pyrrole-2-carbaldehyde with substituted aromatic amines such as aniline, *p*-methoxyaniline, *p*-ethoxyaniline, *p*-phenoxyaniline and *p*-chloroaniline in refluxing dry ethanol or dry benzene.[11]

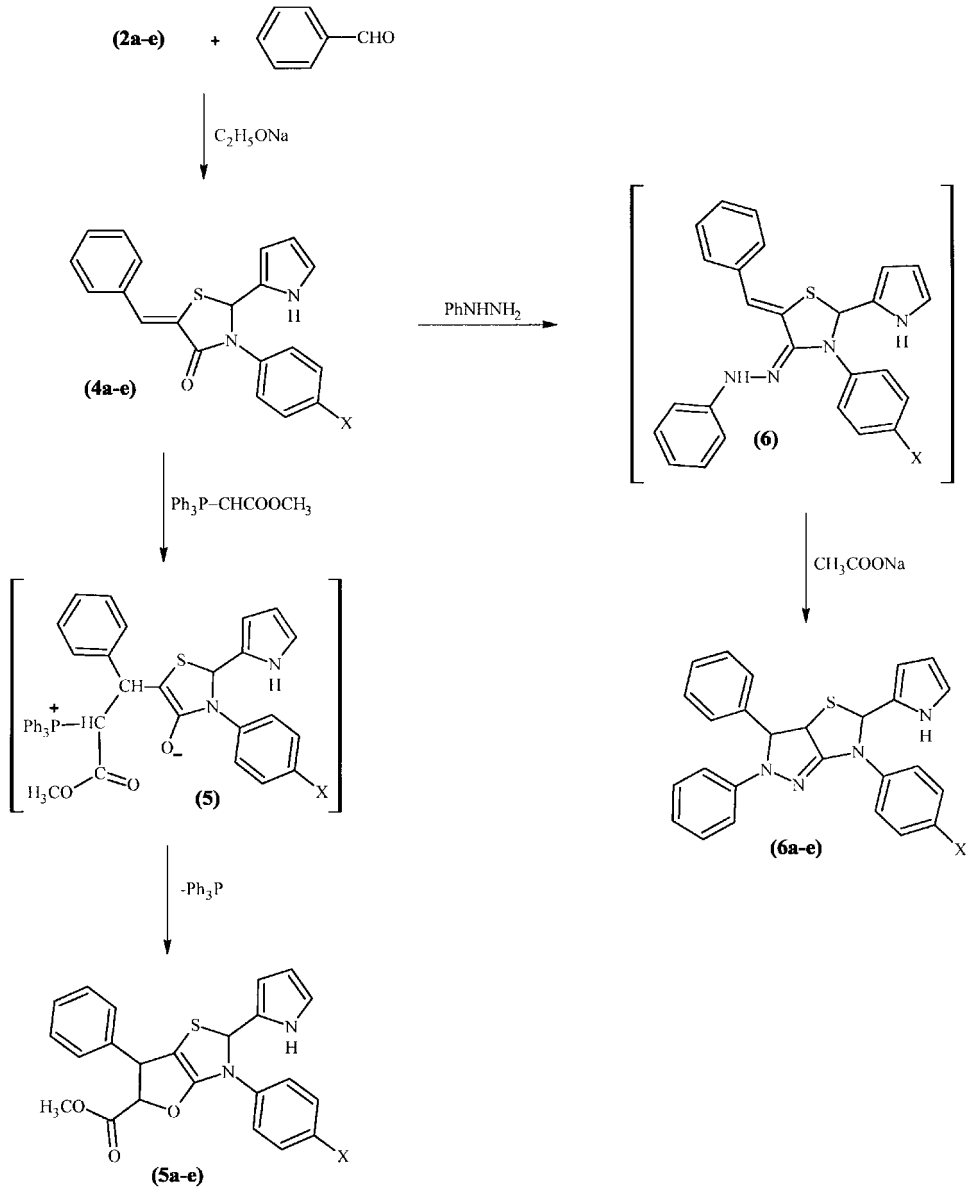
First, we obtained the new 3-aryl-2-(2-pyrrolyl)-4-thiazolidinones, **2a-e** and 5-methyl-3-aryl-2-(2-pyrrolyl)-4-thiazolidinones, **3a-e** in good yields by refluxing equimolar amounts of the imines **1a-e** and thioglycolic or thiolactic acids in dry benzene (Scheme 1). Then compounds **2a-e** reacted with benzaldehyde in the presence of sodium ethoxide to afford 5-benzylidene derivatives **4a-e**. These were refluxed with methoxycarbonylmethylenetriphenylphosphorane in ethyl acetate containing triethylamine. Chromatographic separation produced successively two different substances. In every case, the first eluent contained triphenylphosphine and the second products were **5a-e**. Obviously, the dipolar indermediate **5** formed from the initial attack of the carbanion centre in the Wittig reagent on the active exocyclic electrophilic carbon atom of α,β-unsaturated system in **4a-e** undergoes *O*-alkylation with triphenylphosphine elimination to give 6-methoxycarbonyl-3-aryl-7-phenyl-2-(2-pyrrolyl)dihydro-Δ^4-furo-[2,3-d]-thiazolidines, **5a-e**. On the other hand, 5-benzylidene derivatives **4a-e** condensed with phenylhydrazine in glacial acetic acid in the presence of sodium acetate. The indermediate phenylhydrazones **6** eluded isolation as they underwent subsequent cyclization to give 3-substituted-phenyl-



(1 a-e) **(2a-e and 3a-e)**

R (Comp.no)= H (2a-e), CH_3 (3a-e)

Scheme 1



X (Comp.no)= H (1-6a), OCH_3 (1-6b), OC_2H_5 (1-6c), OC_6H_5 (1-6d), Cl (1-6e)

Scheme 2

6,7-diphenyl-2-(2-pyrrolyl)-Δ^4-pyrazolino-[3,4-e]thiazolidines. **6a-e** (Scheme 2).

The structures of the new compounds were firmly established on the basis of their IR, ^{1}H-NMR, mass spectra and elemental analysis results. The ^{1}H-NMR spectra of **2a-e** displayed doublets at δ 4.60-4.45 due to H_A and H_B system in addition to other signals. The ^{1}H-NMR spectra of the compounds **3a-e** showed two dublets at δ 1.41-1.35 due to methyl protons and two quartets at δ 4.78-4.70 due to a proton on C-5, respectively. This is due to the presence of two diastereomers in each case; the ratio of diastereomers in all seven cases was 2.2 : 1. It was not possible to separate the stereoisomers from each other, because their R_f values were identical. In the condensation products **4a-e**, this AB system was absent confirming that an aldol condensation had taken place. In the ^{1}H NMR spectrum of **5a-e**, 6-CH and 7-CH protons of the dihydrofuran nucleus appeared as two dublets at 4.74-4.44 ppm and 4.16-4.11 ppm, respectively. Regarding compounds **6a-e** showed two dublets at δ 5.81-5.58 ppm due to a proton on 8-CH and 4.97-4.45 due to a proton on 7-CH, respectively. These were demonstrating that the cyclization occurred.

In the IR spectra of the thiazolidinones, **2a-e**, **3a-e** and **4a-e**, the characteristic C=O bands appeared in the region of 1680-1660 cm^{-1}. The strong sharp bands at 1620-1610 cm^{-1} corresponding to initial azomethines were absent, which was the most characteristic evidence of the cyclocondensation. Regarding compounds **5a-e** and **6a-e** amide carbonyl band was absent which clearly confirmed that a cyclocondensation with Wittig reagent and phenylhydrazine had taken

Table 1. Biological activity measurement results of compounds **2a-e**, **3a-e**, **4a-e**, **5a-e** and **6a-e**

Comp. no	2a	2b	2c	2d	2e	3a	3b	3c	3d	3e	4a	4b	4c	4d	4e	5a	5b	5c	5d	5e	6a	6b	6c	6d	6e
Antibacterial activity	–	+	+	–	+	–	+	+	+	–	–	+	+	+	–	–	–	+	–	+	–	+	+	–	+
Antitubercular activity	–	+	+	+	–	–	+	–	–	–	–	–	+	–	+	+	–	–	+	+	+	–	–	+	–

(+) Indicates zone diameter of growth inhibition less than 20 mm. (–) Indicates no inhibition at 100 μg/mL. chloramphenicols inhibition is 18 mm. The tuberculostatic concentration is 0.03 μg/mL.

place.

In summary, we have prepared a new series of potentially bioactive substituted pyrroles. pyrazoles and furans with the thiazolidinyl moieties. The biological activity measurement results are given at Table 1.

Experimental Section

Melting points are uncorrected and were measured in open capillaries with an Electrothermal IA 9100 melting point apparatus. Infrared spectra were recorded on a Mattson 1000 FTIR spectrometer as KBr pellets. Proton NMR spectra were determined on a Nicolet 300 MHz spectrometer in $CDCl_3$ with TMS as internal standard Chemical shifts (δ) were measured in ppm. Mass spectra were obtained with a Shimatzu GS/MS QP 2000 A spectrometer with 70 eV electron impact ionization. Elemental analysis were performed on a Leco CHN-600 analyzer. Column chromatography was performed with silica gel 60 (70-230 mesh) purchased from E. Merck AG. The purities of the obtained substances and the composition of the reaction mixtures were monitoring by thin layer chromatography on silica gel sheets with fluorescent indicator (Merck No. 5554). Solvents and common reagents obtained from Merck and Aldrich. were reagent grade.

3-Phenyl-2-(2-pyrrolyl)-4-thiazolidinone (2a), general procedure. To a solution of the Schiff base (**1a**) derived from pyrrole-2-carbaldehyde and aniline (0.01 mol) in 15 mL dry benzene. thioglicolic acid (0.01 mol) was added. The mixture was refluxed on a water bath for 8 h, then cooled and poured into water. The upper organic layer was washed with $NaHCO_3$ solution (15 mL, 10%) and then with H_2O. dried (Na_2SO_4). and the benzene was distilled off. Upon crystallization of the residue from petroleum ether (40-60 °C)/ethanol (1 : 1). the thiazolidinone was obtained as yellow crystals, yield 89%, mp 102 °C: IR (KBr) 3450. 1660 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.08 (b, 1H. NH), 7.55-5.64 (m. 9H. pyrrole. phenyl and 2-CH). 4.56-4.47 (dd. J = 16.55 Hz. 2H. 5-CH_2,H_A and H_B): MS: *m/z* 243.

3-(4-Methoxyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (2b). Yield 82%. mp 118 °C; IR (KBr) 3420, 1665 cm^{-1}: H NMR ($CDCl_3$, 300 MHz) δ 9.01 (b, 1H. NH). 7.20-5.63 (m. 8H. pyrrole. phenyl and 2-CH). 4.55-4.49 (dd. J = 16.55 Hz, 2H. 5-CH_2, H_A and H_B). 3.74 (s, 3H. OCH_3); MS: *m/z* 274.

3-(4-Ethoxyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (2c). Yield 78%. mp 121 °C; IR (KBr) 3445. 1660 cm^{-1}: H NMR ($CDCl_3$, 300 MHz) δ 9.08 (b, 1H. NH). 7.17-5.64 (m. 8H. pyrrole. phenyl and 2-CH). 4.55-4.49 (dd. J = 16.55 Hz, 2H. 5-CH_2, H_A and H_B). 3.97-3.93 (q, 2H, OCH_2CH_3), 1.34-1.31 (t. 3H. OCH_2CH_3): MS: *m/z* 288.

3-(4-Phenoxyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (2d). Yield 72%, mp 131 °C; IR (KBr) 3450, 1660 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.08 (b. 1H. NH), 7.29-5.64 (m. 13H. pyrrole, phenyl and 2-CH), 4.59-4.45 (dd, J = 16.55 Hz, 2H, 5-CH_2, H_A and H_B); MS: *m/z* 336.

3-(4-Chloroyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (2e). Yield 52%, mp 115 °C; IR (KBr) 3450, 1660 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.07 (b. 1H. NH), 7.41-5.63 (m. 13H. pyrrole, phenyl and 2-CH), 4.56-4.47 (dd, J = 16.55 Hz, 2H, 5-CH_2, H_A and H_B); MS: *m/z* 278.

5-Methyl-3-phenyl-2-(2-pyrrolyl)-4-thiazolidinone (3a). Yield 73%, mp 98 °C; IR (KBr) 3440. 1660 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.08 (b, 1H, NH). 7.52-6.60 (m, 9H, pyrrole, phenyl and 2-CH, both isomers), 4.76-4.73 (q, J = 7.2 Hz, 1H, 5-CH. both isomers), 1.39-1.35 (d, J = 9.3 Hz, 3H. 5-CH_3, both isomers); MS: *m/z* 257.

5-Methyl-3-(4-methoxyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (3b). Yield 69%. mp 109 °C: IR (KBr) 3445, 1660 cm^{-1}: H NMR ($CDCl_3$, 300 MHz) δ 8.90 (b, 1H, NH), 7.17-5.62 (m. 8H. pyrrole. phenyl and 2-CH. both isomers), 4.76-4.74 (q. J = 7.2 Hz. 1H, 5-CH. both isomers). 3.76-3.74 (s, 3H. OCH_3, both isomers). 1.40-1.36 (d, J = 9.3 Hz, 3H, 5-CH_3, both isomers); MS: *m/z* 288.

3-(4-Ethoxyphenyl)-5-methyl-2-(2-pyrrolyl)-4-thiazolidinone (3c). Yield 65%, mp 116 °C: IR (KBr) 3455, 1665 cm^{-1}: H NMR ($CDCl_3$, 300 MHz) δ 9.05 (b. 1H. NH), 7.14-5.62 (m, 8H, pyrrole, phenyl and 2-CH. both isomers), 4.76-4.73 (q, J = 7.2 Hz. 1H. 5-CH. both isomers), 3.97-3.93 (q. 2H. OCH_2CH_3, both isomers). 1.41-1.38 (d. J = 9.3 Hz. 3H, 5-CH_3, both isomers), 1.34-1.31 (t, 3H. OCH_2CH_3): MS: *m/z* 302.

5-Methyl-3-(4-phenoxyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (3d). Yield 63%, mp 125 °C: IR (KBr) 3450, 1660 cm^{-1}: H NMR ($CDCl_3$, 300 MHz) δ 9.08 (b. 1H. NH), 7.26-5.61 (m, 13H, pyrrole, phenyl and 2-CH. both isomers), 4.76-4.73 (q. J = 7.2 Hz. 1H, 5-CH. both isomers). 1.39-1.37 (d. J = 9.3 Hz, 3H, 5-CH_3, both isomers); MS: *m/z* 350.

5-Methyl-3-(4-chloroyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (3e). Yield 44%, mp 128 °C: IR (KBr) 3445. 1660 cm^{-1}: H NMR ($CDCl_3$, 300 MHz) δ 9.08 (b. 1H. NH), 7.36-5.61 (m, 13H, pyrrole, phenyl and 2-CH. both isomers), 4.73-4.67 (q. J = 7.2 Hz. 1H, 5-CH. both isomers). 1.39-1.37 (d. J = 9.3 Hz, 3H, 5-CH_3, both isomers); MS: *m/z* 292.

5-Benzylidene-3-phenyl-2-(2-pyrrolyl)-4-thiazolidinone (4a), general procedure. Equimolar solutions of **2a** (0.01 mol) and benzaldehyde (0.01 mol) in dry benzene (25 mL) in presence of sodium ethoxide were refluxed for about 10-12 h and cooled. poured into ice cold water and acidified

with glacial acetic acid. The solution was extracted, the benzene layer separated, dried ($CaCl_2$) and evaporated *in vacuo*. The crude product was crystallized from petroleum ether : diethyl ether (1 : 1) to give yellow crystals, yield 52%, mp 149 °C; IR (KBr) 3435, 1665 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.07 (b, 1H, NH), 7.57-5.79 (m, 15H, pyrrole, phenyl, 2-CH, =CH); MS: *m/z* 331.

5-Benzylidene-3-(4-methoxyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (4b). Yield 58%, mp 158 °C; IR (KBr) 3425, 1665 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.07 (b, 1H, NH), 7.70-5.79 (m, 14H, pyrrole, phenyl, 2-CH, =CH), 3.73 (s, 3H, OCH_3); MS: *m/z* 362.

5-Benzylidene-3-(4-ethoxyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (4c). Yield 62%, mp 149 °C; IR (KBr) 3440, 1665 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.08 (b, 1H, NH), 7.71-5.79 (m, 14H, pyrrole, phenyl, 2-CH, =CH), 3.95-3.82 (q, 2H, OCH_2CH_3), 1.33-1.31 (t, 3H, OCH_2CH_3); MS: *m/z* 376.

5-Benzylidene-3-(4-phenoxyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (4d). Yield 65%, mp 157 °C; IR (KBr) 3435, 1665 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.08 (b, 1H, NH), 7.75-5.77 (m, 19H, pyrrole, phenyl, 2-CH, =CH); MS: *m/z* 424.

5-Benzylidene-3-(4-chloroyphenyl)-2-(2-pyrrolyl)-4-thiazolidinone (4e). Yield 49%, mp 162 °C; IR (KBr) 3435, 1670 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.06 (b, 1H, NH), 7.43-5.79 (m, 14H, pyrrole, phenyl, 2-CH, =CH); MS: *m/z* 366.

General procedure for compounds 5a-e. A solution of **4a-e** (0.01 mol) and methoxycarbonylmethylenetriphenylphosphorane[12] (0.015 mol) in ethyl acetate (50 mL) was refluxed for 24 h. After evaporation of the solvent, the remainder was subjected to column chromatography on silica gel eluted with petroleum ether/acetone (9 : 1) with increasing amounts of acetone (upto 3 : 1). Two products were triphenylphosphine and **5a** (58.5%) which were isolated as orange crystals and identified, mp 228 °C. The spectral data for **5a** were the following: IR (KBr) 3235, 1720 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 7.39-6.34 (m, 13H, phenyls and pyrrole), 6.21 (d, J = 0.65 Hz, 1H, 2-CH), 4.74 (d, J = 5.76 Hz, 1H, 6-CH), 4.14 (d, J = 5.76 Hz, 1H, 7-CH), 3.72 (s, 3H, OCH_3); MS, *m/z* 404.

Anal. Calc. for $C_{23}H_{20}N_2O_3S$: C, 68.29; H, 4.98; N, 6.92; S, 7.92. Found: C, 68.18; H, 5.02; N, 7.05; S, 7.88.

The data for **5b** were the following: Yield 45.7%, mp 233 °C; IR (KBr) 3220, 1714 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 7.35-6.34 (m, 15H, phenyls and pyrrole), 6.19 (d, J = 0.65 Hz, 1H, 2-CH), 4.67 (d, J = 5.76 Hz, 1H, 6-CH), 4.11 (d, J = 5.76 Hz, 1H, 7-CH), 3.74 (s, 3H, OCH_3), 3.73 (s, 3H, OCH_3); MS, *m/z* 434.

Anal. Calc. for $C_{24}H_{22}N_2O_4S$: C, 66.34; H, 5.10; N, 6.45; S, 7.38. Found: C, 66.39; H, 5.21; N, 6.37; S, 7.30.

The data for **5c** were the following: Yield 47.3%, mp 225 °C; IR (KBr) 3300, 1719 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 7.39-6.32 (m, 12H, phenyls and pyrrole), 6.21 (d, J = 0.65 Hz, 1H, 2-CH), 4.74 (d, J = 5.76 Hz, 1H, 6-CH), 4.16 (d, J = 5.76 Hz, 1H, 7-CH), 3.95 (q, 2H, OCH_2CH_3), 3.72 (s, 3H, OCH_3), 1.32 (s, 3H, OCH_2CH_3); MS, *m/z* 448.

Anal. Calc. for $C_{25}H_{24}N_2O_4S$: C, 66.94; H, 5.39; N, 6.24; S, 7.15. Found: C, 66.87; H, 5.43; N, 6.29; S, 7.19.

The data for **5d** were the following: Yield 42.5%, mp 249 °C; IR (KBr) 3310, 1715 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 7.37-6.36 (m, 17H, phenyls and pyrrole), 6.11 (d, J = 0.65 Hz, 1H, 2-CH), 4.44 (d, J = 5.76 Hz, 1H, 6-CH), 4.12 (d, J = 5.76 Hz, 1H, 7-CH), 3.73 (s, 3H, OCH_3); MS, *m/z* 496.

Anal. Calc. for $C_{29}H_{24}N_2O_4S$: C, 70.14; H, 4.87; N, 5.64; S, 6.46. Found: C, 70.21; H, 4.81; N, 5.61; S, 6.43.

The data for **5e** were the following: Yield 51.4%, mp 194 °C; IR (KBr) 3325, 1716 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 7.40-6.34 (m, 12H, phenyls and pyrrole), 6.18 (d, J = 0.65 Hz, 1H, 2-CH), 4.73 (d, J = 5.76 Hz, 1H, 6-CH), 4.14 (d, J = 5.76 Hz, 1H, 7-CH), 3.70 (s, 3H, OCH_3); MS, *m/z* 438.

Anal. Calc. for $C_{23}H_{19}ClN_2O_3S$: C, 62.94; H, 4.36; N, 6.38; S, 7.30. Found: C, 62.95; H, 4.32; N, 6.39; S, 7.21.

General procedure for compounds 6a-e. Benzylidene derivatives **4a-e** (0.01 mol) in glacial acetic acid (10 mL), sodium acetate (1 g) and phenylhydrazine (1 mL) over a wire gauge for 7 h. It was filtered hot to remove any undissolved substances, cooled, then water was added and boiled for a few minutes when the orange crystals of **6a** (52%) were obtained, mp 177 °C; IR (KBr) 3420, 1575 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.08 (b, 1H, NH), 7.54-5.87 (m, 19H, pyrrole, phenyl and 2-CH), 5.58 (d, J = 1.78 Hz, 1H, 8-CH), 4.90 (d, J = 1.78 Hz, 1H, 7-CH); MS, *m/z* 422.

Anal. Calcd. for $C_{26}H_{22}N_4S$: C, 73.93; H, 5.21; N, 13.27; S, 7.58. Found: C, 73.98; H, 5.35; N, 13.19; S, 7.47.

The data for **6b** were the following: Yield 60%, mp 187 °C; IR (KBr) 3425, 1580 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.06 (b, 1H, NH), 7.43-5.79 (m, 18H, pyrrole, phenyl and 2-CH), 5.58 (d, J = 1.78 Hz, 1H, 8-CH), 4.45 (d, J = 1.78 Hz, 1H, 7-CH), 3.74 (s, 3H, OCH_3); MS: *m/z* 452.

Anal. Calcd. for $C_{27}H_{24}N_4OS$: C, 71.68; H, 5.30; N, 12.38; S, 7.08. Found: C, 71.73; H, 5.28; N, 12.31; S, 7.11.

The data for **6c** were the following: Yield 65%, mp 179 °C; IR (KBr) 3450, 1580 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.06 (b, 1H, NH), 7.45-5.79 (m, 18H, pyrrole, phenyl and 2-CH), 5.81 (d, J = 1.78 Hz, 1H, 8-CH), 4.97 (d, J = 1.78 Hz, 1H, 7-CH), 3.95-3.82 (q, 2H, OCH_2CH_3), 1.33-1.31 (t, 3H, OCH_2CH_3); MS: *m/z* 466.

Anal. Calcd. for $C_{28}H_{26}N_4OS$: C, 72.10; H, 5.58; N, 12.01; S, 6.86. Found: C, 72.21; H, 5.52; N, 11.97; S, 6.83.

The data for **6d** were the following: Yield 62%, mp 182 °C; IR (KBr) 3425, 1570 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.07 (b, 1H, NH), 7.48-5.74 (m, 23H, pyrrole, phenyl and 2-CH), 5.58 (d, J = 1.78 Hz, 1H, 8-CH), 4.45 (d, J = 1.78 Hz, 1H, 7-CH); MS: *m/z* 514.

Anal. Calcd. for $C_{32}H_{26}N_4OS$: C, 74.70; H, 5.06; N, 10.89; S, 6.22. Found: C, 74.75; H, 5.02; N, 10.81; S, 6.29.

The data for **6e** were the following: Yield 62%, m.p. 182 °C; IR (KBr) 3440, 1580 cm^{-1}; H NMR ($CDCl_3$, 300 MHz) δ 9.07 (b, 1H, NH), 7.54-5.78 (m, 18H, pyrrole, phenyl and 2-CH), 5.81 (d, J = 1.78 Hz, 1H, 8-CH), 4.95 (d, J = 1.78 Hz, 1H, 7-CH); MS: *m/z* 456.

Anal. Calcd. for $C_{26}H_{21}N_4SCl$: C, 68.34; H, 4.60; N,

12.26: S. 7.00. Found: C. 68.28: H, 4.56; N. 12.32; S. 6.97.

Biological Evolution.

Antitubercular activity: The *in vitro* tuberculostatic activity of 4-thiazolidinone derivatives was studied against *Mycobacterium tuberculosis* using Lowenstein Jensens egg medium by serial two fold dilution method and the retardation of the growth rate studied upto six weeks at 37 °C. Cloramphenicol was screened under the same conditions as standard.

Antibacterial activity: Antibacterial activity of the compounds was tested by agar plate diffusion technique against *Staphylococcus aureus* using tetracycline as standard.

Acknowledgment. Financial support of this research by TUBITAK (The Scientific and Technical Research Council of Turkey) [project number: TBAG-1987 (100T113)] is gratefully acknowledged. We also thank to Dr. Irfan Ünlüsayin from M. N. Medicine Factory in Istanbul for helping with biological evolution.

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