Reactivity of Malononitrile towards Sulphamide and *N*-Substituted Sulphamides: Synthesis and Hydrolysis Reactions of 3,5-Diamino-1,2,6-thiadiazine 1,1-Dioxides

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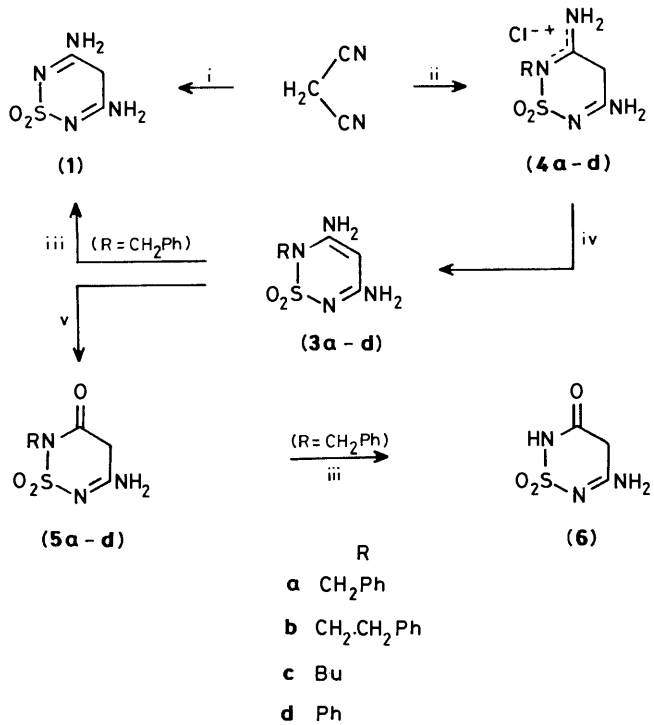
The reaction of sulphamide and *N*-substituted sulphamides with malononitrile under acid catalysis gave respectively 3,5-diamino- 4*H*- or 2*H*-1,2,6-thiadiazine 1,1-dioxides (**1**) and (**3a—d**). Mild acid hydrolysis of the latter afforded 5-amino-2*H*-1,2,6-thiadiazin-3(4*H*)-one 1,1-dioxides (**5a—d**) in excellent yield. No convenient methods for the preparation of all these compounds had previously been reported.

3,5-Diamino-4*H*-1,2,6-thiadiazine 1,1-dioxide (**1**) is a valuable intermediate in the synthesis of fused heterocycles derived from 1,2,6-thiadiazine 1,1-dioxide, which can be considered as analogues of an interesting series of purines,[1] purine nucleosides,[2] pteridines,[3] and pyridopyrimidines.[4] Furthemore, 3,4,5-triamino-2*H*-1,2,6-thiadiazine 1,1-dioxide, derived from (**1**) *via* the corresponding 4-hydroxyimino derivative, has shown activity as an antiparasitic agent.[5]



Scheme. *Reagents:* i, $O_2S(NH_2)_2$, HCl; ii, $O_2S(NH_2)NHR$ (**2a—d**), HCl; iii, H_2, Pd/C; iv, H_2O, $-HCl$; v, H_3O^+

Although Walter claimed in a patent[6] the preparation of (**1**) by reaction of sulphamide and malononitrile in an alcoholic solvent at room temperature, the procedure failed in our hands under all the reaction conditions claimed.

† Although many reactions of urea have been applied to sulphamide, the analogous cycloaddition of malononitrile and urea has never been reported. The corresponding diaminopyrimidone has been obtained by indirect methods (ref. 9).

Thus, the only available method reported until now for the preparation of compound (**1**) is that of Cherkasov and Dashevskaya,[7] which involves thermal condensation of malondiamidine and sulphamide in the absence of solvent. Since malonamidine is not commercially available, it must be prepared from malononitrile, *via* the corresponding bisimino ether and diamidine dihydrochlorides.[8]

Results and Discussion

We now report a very simple method for the preparation of compound (**1**) in 70—80% yield based on the acid-catalysed cycloaddition of malononitrile and sulphamide, using diglyme or 1,2-dimethoxyethane as solvent. The use of the latter seems to be essential because sulphamide does not dissolve in the usual nonalcoholic solvents and, on the other hand, the reaction does not take place at all in water or in lower alcohols, in which sulphamide is soluble.†

We have also studied the reaction of a series of *N*-substituted sulphamides (**2**) with malononitrile, and 2-substituted 3,5-diamino-2*H*-1,2,6-thiadiazine 1,1-dioxides (**3**) have been generally obtained in 50—70% yield. The initial products from the reaction were white precipitates which we supposed to be the diaminothiadiazine hydrochlorides (**4**), sometimes contaminated with traces of malononitrile dimer (2-amino-1,1,3-tricyanopropene). This product is expected to be formed as a by-product in many reactions involving malononitrile, both under basic and acidic conditions.[10]

The hydrochlorides (**4**) were insoluble in most organic solvents and easily hydrolysed by water to the free diaminothiadiazines (**3**), thus confirming the weak basic character of the latter. Since the treatment of solutions of compounds (**3**) in dry 1,2-dimethoxyethane with hydrogen chloride regenerated the salts (**4**), and the related compounds (**5**) (see below) failed to react, we think that only the R–N(2)–C(3)–NH_2 group, present in compounds (**3**) and not in compounds (**5**), is involved in the formation of salts. On the basis of the spectral data commented on below, we propose the depicted 'amidinium chloride' structure for these compounds. No reports on the isolation of salts of the very weakly basic aminothiadiazine dioxides have been found in the literature although the weak basicity of some related aminopyridothiadiazines has been noticed.[4]

In the preparation of compound (**1**) from malononitrile and sulphamide, the crude product could only be purified by recrystallization from water, affording the free thiadiazine. Nevertheless, since the above mentioned group is not present in compound (**1**), the formation of an initial hydrochloride seems unlikely.

Although imidoyl chlorides[11] or their protonated forms, *i.e.* chloromethyleneiminium salts,[12] can react with sulphamide

amino groups, we have no evidence of the intermediacy of malonimidoyl chloride in our process. When the reaction is carried out in the absence of sulphamide, only the malononitrile dimer is obtained; in fact, similar syntheses of this compound using other solvents have been reported.[13]

Our method of preparation of compounds (**3**) is the only convenient one to date as previously, alkylation of compound (**1**) yielded 4-mono-, 4,4- and 2,4-di-alkylated products, or mixtures of products alkylated at various positions.[14] Following closely related procedures, the reaction of sulphamides with cyanogen yielded 1,2,5-thiadiazole 1,1-dioxides.[15] Although condensation reactions of sulphamides with α- and β-diketones are known,[16] our studies are, to our knowledge, the first examples of reaction of the former with dinitriles.

On the other hand, attempts to condense β-keto nitriles with sulphamides, both under basic and acidic conditions, failed. Nevertheless, the compounds we could expect from this reaction have been previously prepared by another approach, using 3-aminoisoxazole derivatives and substituted sulphamoyl chlorides or azides.[17]

Mild acid hydrolysis of compounds (**3**) afforded 2-substituted 5-aminothiadiazinones (**5**) in 80—90% yield. As expected, only the 'enamino' group at position 3, probably through the corresponding imino tautomer, was hydrolysed by this treatment. Under these mild conditions, 'amidine' amino groups of compound (**1**) failed to react,[18] this fact not being in agreement with the data reported by Walter in another patent.[19]

This procedure for the preparation of compounds (**5**) is useful because alkylation of the parent compound (**6**) is complex, depending on the softness or hardness of the alkylating agents and the reaction conditions. Thus, only groups such as methyl or substituted glucopyranosyl (but not benzyl) could be selectively introduced at position 2 in *ca.* 25% yield. Other approaches to compounds (**5**), such as the base-catalysed condensation of *N*-benzylsulphamide and ethyl cyanoacetate, only yielded 5-benzylamino-2*H*-1,2,6-thiadizin-3(4*H*)-one 1,1-dioxide, which was assumed to be formed through a Dimroth rearrangement. Other *N*-substituted sulphamides failed to react.[20]

Finally, 2-benzyl substituted compounds (**3a**) and (**5a**) could be hydrogenolysed respectively to the unsubstituted derivatives (**1**) and (**6**) in very good yield.

The structure of all new compounds has been established on the basis of spectral, analytical, and chemical data.

The C-3 and C-5 signals of compounds (**3**) have been assigned according to the data reported for some related products,[21] and those of compounds (**5**), according to the coupled spectrum of (**5c**). C-3 Produces a complex signal ($^2J_{C-3,4-H}$ 6.5 Hz; $^3J_{C-3,CH_2N}$ 3.3 Hz) whilst the C–5 signal is a triplet ($^2J_{C-5,4-H}$ 5.8 Hz).

Although the existence of a single tautomer in compounds (**3**) and (**5**) seems evident from their ^{1}H and ^{13}C n.m.r. spectra, 4-H signals of the former slowly exchange with deuterium oxide; this fact can be attributed to the existence of an undetectable amount of imino tautomer. Literature reports show that,[22] although amino tautomers predominate largely in the amino derivatives of aromatic heterocycles, imino tautomers seem to be present in solutions of non-aromatic derivatives such as (**3**). On the other hand, the exchange of 'malonic' methylene protons of thiadiazines such as (**5**) is very common.

The hydrochlorides (**4**) are insoluble in most solvents used in ^{1}H and ^{13}C n.m.r. spectroscopy, and in $(CD_3)_2SO$, complex spectra, from which the presence in the solution of various species can be inferred, are obtained. This can be explained by the presence of moisture usually found in this solvent, and the decomposition reactions which this may induce.

However, we have been able to study the protonated species in solutions of compounds (**3**) in trifluoroacetic acid. Although the change from $(CD_3)_2SO$ to CF_3CO_2H produces a slight deshielding of most C-signals of compounds (**3a**) and (**5b**), C-4 of the former appears in the second solvent at *ca.* 33 p.p.m., *i.e.* *ca.* 37 p.p.m. further upfield than in $(CD_3)_2SO$, in the sp^3 carbon region. This signal, in the coupled spectrum, appears as a triplet ($^1J_{C-4,4-H}$ 139 Hz) broadened by probable coupling through three bonds with hydrogen atoms of NH groups.

I.r. spectra of the salts (**4**) are very different from those of the free bases (**3**); in the former, a low intensity structured broad band between 2 300 and 3 000 cm^{-1}, assigned to the NH^+ stretching, is evident. The mass spectra of salts (**4**) are very similar to those of the free bases (**3**); in most cases, only slight changes in the relative intensity of peaks have been found.

Experimental

M.p.s were determined in a Gallenkamp capillary apparatus, and are uncorrected. I.r. spectra were obtained on a Perkin-Elmer 257 spectrophotometer. ^{1}H N.m.r. spectra were recorded at 90 MHz on a Varian EM-390 spectrometer, and ^{13}C n.m.r. spectra at 20 MHz on a Bruker WP-80 spectrometer. TMS was used as internal standard in all ^{1}H n.m.r. spectra, and in ^{13}C n.m.r. spectra registered in $(CD_3)_2SO$; a capillary tube containing $(CD_3)_2SO$ was used as external standard in ^{13}C n.m.r. spectra registered in CF_3CO_2H. Mass spectra were obtained at 70 eV on a VG-12-250 spectrometer. Microanalyses were performed by the Departamento de Análisis, Centro Nacional de Química Orgánica, C.S.I.C., Madrid, Spain.

Preparation of 3,5-*Diamino*-4H-1,2,6-*thiadiazine* 1,1-*Dioxide* (**1**).—A solution of sulphamide (96 g, 1 mol) and malononitrile (66 g, 1 mol) in diglyme (400 ml) was cooled to 0 °C, and saturated with a slow stream of dry hydrogen chloride. The mixture was stirred at the same temperature for 2 h, and then allowed to reach room temperature overnight. The separated solid was filtered off, washed with diglyme, cold water, and ether, and dried; yield 70—80%, m.p. 282—283 °C (lit.,[7] 285 °C). Although the crude product was pure enough to be used in further steps, it could be recrystallized from water, or dissolved in cold dilute aqueous sodium hydroxide, filtered free from insoluble material, and precipitated with concentrated hydrochloric acid.

Preparation of N-*Substituted Sulphamides* (**2a—d**).—Compounds (**2a—c**) were obtained from sulphamide and the corresponding amines following the procedure of Paquin.[23] Compound (**2d**) was obtained from sulphamoyl chloride and aniline, following the method of Graf.[24]

Preparation of 2-*Substituted* 3,5-*Diamino*-2H-1,2,6-*thiadiazine* 1,1-*Dioxide Hydrochlorides** (**4a—d**).—These products were prepared from the corresponding *N*-substituted sulphamides (**2**) (40 mmol) and malononitrile (40 mmol) in 1,2-dimethoxyethane (40 ml), following the method described for the preparation of compound (**1**). The reaction mixture was allowed to stand at room temperature for 4 days after which the precipitated solid was filtered off, washed with dimethoxyethane (30 ml), and dried. Since compounds (**4**) [except (**4c**)] were very insoluble in organic solvents and easily hydrolysed by water, only a small sample was purified for analysis, and the remainder of the material was used in the preparation of compounds (**3**) without further purification. See Table 1 for yields, m.p.s, and analytical data.

(**4a**) $\nu_{max.}$(Nujol) 3 365, 3 200, 3 020 (NH), 1 685, 1 665, and 1 605 cm^{-1}; (**4b**) $\nu_{max.}$(Nujol) 3 360, 3 220, 3 050 (NH), 1 680, and 1 600 cm^{-1}; (**4c**) $\nu_{max.}$(Nujol) 3 470, 3 350, 3 100 (NH), 1 670,

* These compounds are named as hydrochlorides of the bases, although the proposed structure of the ring in the salts is not that of a fully unsaturated 2*H*-1,2,6-thiadiazine.

Table 1. M.p., yield, and analytical data of compounds (**3a—d**), (**4a—d**), and (**5a—d**)

	Compound	Molecular formula	Yield (%)	M.p. (°C) (solvent)	Found (%) (required) C	H	N	S	Cl
(**3a**)	3,5-Diamino-2-benzyl-2*H*-1,2,6-thiadiazine 1,1-dioxide	$C_{10}H_{12}N_4O_2S$	93	224—226 (water)	47.3 (47.6)	4.95 (4.8)	22.3 (22.2)	12.5 (12.7)	—
(**3b**)	3,5-Diamino-2-phenethyl-2*H*-1,2,6-thiadiazine 1,1-dioxide	$C_{11}H_{14}N_4O_2S$	95	204—206 (water)	49.5 (49.6)	5.4 (5.3)	21.3 (21.0)	12.3 (12.0)	—
(**3c**)	3,5-Diamino-2-butyl-2*H*-1,2,6-thiadiazine 1,1-dioxide	$C_7H_{14}N_4O_2S$	91	164—166 (water)	38.7 (38.5)	6.5 (6.5)	25.4 (25.7)	14.9 (14.7)	—
(**3d**)	3,5-Diamino-2-phenyl-2*H*-1,2,6-thiadiazine 1,1-dioxide	$C_9H_{10}N_4O_2S$	94	227—229 (water)	45.35 (45.4)	4.0 (4.2)	23.6 (23.5)	13.6 (13.5)	—
(**4a**)	(**3a**)·hydrochloride	$C_{10}H_{13}ClN_4O_2S$	70	205—207 (ethanol)	41.7 (41.6)	4.2 (4.5)	19.2 (19.4)	10.9 (11.1)	12.5 (12.3)
(**4b**)	(**3b**)·hydrochloride	$C_{11}H_{15}ClN_4O_2S$	74	203—205 (ethanol)	43.3 (43.6)	5.2 (5.0)	18.6 (18.5)	10.7 (10.6)	11.5 (11.7)
(**4c**)	(**3c**)·hydrochloride	$C_7H_{15}ClN_4O_2S$	61	210—212 (propan-1-ol)	33.2 (33.0)	5.7 (5.9)	22.1 (22.0)	12.6 (12.6)	13.6 (13.9)
(**4d**)	(**3d**)·hydrochloride	$C_9H_{11}ClN_4O_2S$	37	216—218 (ethanol)	39.6 (39.35)	4.3 (4.0)	20.5 (20.4)	11.7 (11.7)	13.2 (12.9)
(**5a**)	5-Amino-2-benzyl-2*H*-1,2,6-thiadiazin-3(4*H*)-one 1,1-dioxide	$C_{10}H_{11}N_3O_3S$	85	154—156 (water)	47.7 (47.4)	4.3 (4.4)	16.6 (16.6)	12.8 (12.7)	—
(**5b**)	5-Amino-2-phenethyl-2*H*-1,2,6-thiadiazin-3(4*H*)-one 1,1-dioxide	$C_{11}H_{13}N_3O_3S$	87	170—172 (water)	49.2 (49.4)	4.95 (4.9)	15.7 (15.7)	12.0 (12.0)	—
(**5c**)	5-Amino-2-butyl-2*H*-1,2,6-thiadiazin-3(4*H*)-one 1,1-dioxide	$C_7H_{13}N_3O_3S$	91	140—142 (water)	38.6 (38.35)	5.9 (6.0)	19.1 (19.2)	14.6 (14.6)	—
(**5d**)	5-Amino-2-phenyl-2*H*-1,2,6-thiadiazin-3(4*H*)-one 1,1-dioxide	$C_9H_9N_3O_3S$	84	254—256 (water)	44.9 (45.2)	3.6 (3.8)	17.45 (17.6)	13.4 (13.4)	—

Table 2. I.r. and mass spectral data of compounds (**3a—d**) and (**5a—d**)

	$\nu_{max.}$(Nujol)/cm^{-1}	*m/z* (%)
(**3a**)	3 460, 3 400, 3 360, 3 300, 3 180 (NH), 1 645, and 1 625	252 (M^+, 11), 111 (7), 92 (7), 91 (100), 65 (10), and 45 (5)
(**3b**)	3 450, 3 430, 3 350, 3 310, 3 190 (NH), 1 630, and 1 620	266 (M^+, 17), 175 (58), 162 (100), 135 (17), 105 (16), and 91 (38)
(**3c**)	3 440, 3 400, 3 330, 3 220 (NH), 1 645, and 1 630	218 (M^+, 36), 202 (28), 175 (86), 162 (100), 146 (14), 111 (90), 84 (33), 67 (26), 55 (51), and 43 (56)
(**3d**)	3 440, 3 420, 3 320, 3 200 (NH), 1 640, and 1 620	238 (M^+, 75), 174 (23), 132 (10), 119 (17), 104 (19), 93 (100), 92 (28), 91 (12), 77 (39), 65 (34), and 51 (23)
(**5a**)	3 420, 3 320, 3 250 (NH), 1 720 (CO), and 1 650	253 (M^+, 5), 189 (32), 188 (100), 160 (8), 146 (17), 132 (17), 118 (23), 104 (40), and 91 (56)
(**5b**)[a]	3 540, 3 380, 3 180 (NH), 1 690 (CO), and 1 670	267 (M^+, 4), 176 (4), 164 (2), 159 (2), 147 (18), 104 (100), 91 (20), and 65 (6)
(**5c**)[a]	3 380, 3 320, 3 240 (NH), 1 720 (CO), and 1 640	219 (M^+, 2), 176 (42), 164 (100), 147 (78), 112 (8), 98 (13), 85 (11), 56 (18), and 55 (19)
(**5d**)	3 440, 3 390, 3 330, 3 260 (NH), 1 715 (CO), and 1 680	239 (M^+, 41), 159 (4), 120 (25), 93 (100), 91 (37), 77 (17), 64 (27), and 56 (70)

[a] $\nu_{max.}$(CH_3OH) 1 700 and 1 680 cm^{-1}.

and 1 610 cm^{-1}; (**4d**) $\nu_{max.}$(Nujol) 3 325, 3 200, 3 050 (NH), 1 670, and 1 580 cm^{-1}.

Preparation of 2-*Substituted* 3,5-*Diamino*-2H-1,2,6-*thiadiazine* 1,1-*Dioxides* (**3a—d**).—A vigorously stirred suspension of the corresponding hydrochloride (**4**) (30 mmol) in water (100 ml) was neutralized with solid sodium carbonate, and the resulting precipitate collected. The solution, evaporated to dryness and extracted with acetone, afforded some additional compound (**3**). Although these compounds can be recrystallized from water, the crude products may be contaminated by traces of malononitrile dimer (t.l.c., chloroform–methanol 9 : 1; silica-gel) which are best removed by recrystallization from propan-1-ol although with lower recovery. When compounds (**3**) are to be used in the preparation of the corresponding products (**5**), further purification of crude material is not necessary. M.p.s, yields, and analytical data are in Table 1, i.r. and mass spectral data in Table 2, and ^1H and ^{13}C n.m.r. data in Table 3.

Preparation of 2-*Substituted* 5-*Amino*-2H-1,2,6-*thiadiazin*-3(4H)-*one* 1,1-*Dioxides* (**5a—d**).—A suspension of the corresponding 3,5-diaminothiadiazine (**3**) (4 mmol) in 1% hydrochloric acid (50 ml) was refluxed for 10 min and then cooled and allowed to stand at 4 °C overnight. The crystallized solid was

Table 3. ^1H and ^{13}C N.m.r. spectral data of compounds (**3a—d**)

	$\delta_H[(CD_3)_2SO]$			$\delta_C[(CD_3)_2SO]$			
	4-H (1 H, s, exch.)	NH_2 (4 or 2 + 2 H, br s, exch.)	Side chain	C-3 (s)	C-4 (d)	C-5 (s)	Side chain
(**3a**)[a]	4.70	6.72	4.93 (2 H, s, CH_2Ph) and 7.33 (5 H, s, Ph)	156.27	70.49	162.74	44.88 (t, CH_2Ph), 126.74 (d), 126.98 (d), 128.10 (d), and 136.71 (s) (Ph)
(**3b**)	4.67	6.58 and 6.78	2.87 (2 H, t, CH_2Ph), 3.85 (2 H, t, CH_2N), and 7.28 (5 H, s, Ph)	156.36	70.08	162.61	34.71 (t, CH_2Ph), 43.39 (t, CH_2N), 126.40 (d), 128.34 (d), 128.75 (d), and 138.14 (s) (Ph)
(**3c**)	4.60	6.49 and 6.72	0.87 (3 H, t, CH_3), 1.1—1.7 [4 H, m, $(CH_2)_2CH_3$], and 3.60 (2 H, t, CH_2N)	156.45	69.77	162.52	13.62 (q, CH_3), 19.20 and 30.82 [both t, $(CH_2)_2CH_3$], and 41.88 (t, CH_2N)
(**3d**)	4.80	6.30 and 6.78	7.2—7.7 (5 H, m, Ph)	156.56	69.33	162.94	129.07 (d), 129.59 (d), 129.68 (d), and 133.55 (s) (Ph)

[a] $\delta_H(CF_3CO_2H)$ 4.42 (2 H, br s, 4-H), 5.33 (2 H, s, CH_2Ph), and 7.43 (5 H, s, Ph); $\delta_C(CF_3CO_2H)$ 33.45 (t, C-4), 51.07 (t, CH_2Ph), 128.09 (d), and 131.26 (s + d) (Ph), and 164.40 and 166.37 [both s, C-3 and C-5 (or *vice versa*)].

Table 4. ^1H and ^{13}C N.m.r. spectral data of compounds (**5a—d**)

	$\delta_H[(CD_3)_2SO]$			$\delta_C[(CD_3)_2SO]$			
	4-H (2 H, s, exch.)	NH_2 (2 H, br s, exch.)	Side chain	C-3 (s)	C-4 (t)	C-5 (s)	Side chain
(**5a**)	3.85	8.75	4.87 (2 H, s, CH_2Ph) and 7.33 (5 H, s, Ph)	163.94	36.41	165.37	44.60 (t, CH_2Ph), 127.19 (d), 127.66 (d), 128.16 (d), and 136.57 (s) (Ph)
(**5b**)[a]	3.76	8.70	2.88 (2 H, t, CH_2Ph), 3.89 (2 H, t, CH_2N), and 7.27 (5 H, s, Ph)	163.52	36.17	165.21	34.35 (t, CH_2Ph), 42.55 (t, CH_2N), 126.42 (d), 128.46 (d), 128.59 (d), and 138.24 (s) (Ph)
(**5c**)	3.72	8.67	0.88 (3 H, t, CH_3), 1.1—1.7 [4 H, m, $(CH_2)_2CH_3$], and 3.67 (2 H, t, CH_2N)	163.66	36.19	165.27	13.46 (q, CH_3), 19.36 and 30.30 [both t, $(CH_2)_2CH_3$], and 41.20 (t, CH_2N)
(**5d**)	3.99	8.89	7.3—7.7 (5 H, m, Ph)	163.74	36.41	165.08	128.90 (d), 129.15 (d), 129.28 (d) and 133.22 (s) (Ph)

[a] $\delta_H(CF_3CO_2H)$ 3.07 (2 H, t, CH_2Ph), 4.03 (2 H, s, 4-H), 4.27 (2 H, t, CH_2N), and 7.27 (5 H, s, Ph); $\delta_C(CF_3CO_2H)$ 36.12 (t, CH_2Ph), 37.91 (t, C-4), 47.02 (t, CH_2N), 128.39 (d), 130.55 (d), 130.77 (d), and 139.01 (s) (Ph), and 168.48 and 168.87 [both s, C-3 and C-5 (or *vice versa*)].

filtered off and recrystallized. M.p.s, yields, and analytical data are in Table 1, i.r. and mass spectral data in Table 2, and ^1H and ^{13}C n.m.r. data in Table 4.

Hydrogenolysis of 3,5-*Diamino*-2-*benzyl*-2H-1,2,6-*thiadiazine* 1,1-*Dioxide* (**3a**).—A solution of compound (**3a**) (0.50 g, 2 mmol) in methanol (250 ml) was treated with hydrogen (40 p.s.i.), in the presence of 10% palladium–carbon catalyst, at room temperature. After 3 h the solution was evaporated to dryness and the residue extracted with boiling water (100 ml). The catalyst was removed and the resulting solution evaporated to dryness to yield 0.31 g (95%) of pure compound (**1**), whose m.p. and spectra were identical to those of a sample prepared from sulphamide and malononitrile.

Hydrogenolysis of 5-*Amino*-2-*benzyl*-2H-1,2,6-*thiadiazin*-3-(4H)-*one* 1,1-*Dioxide* (**5a**).—A solution of compound (**5a**) (0.50 g, 2 mmol) in methanol (250 ml) was hydrogenated as above. After 3 h, the catalyst was removed and the solution evaporated to dryness, yielding pure 5-amino-2*H*-1,2,6-thiadiazin-3(4*H*)-one 1,1-dioxide (**6**) (0.30 g, 90%), whose m.p. and spectral data were identical with those reported;[18] $\delta_C[(CD_3)_2SO]$ 35.32 (t, C-4), and 165.33 and 165.83 [both s, C-3 and C-5 (or *vice versa*)].

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