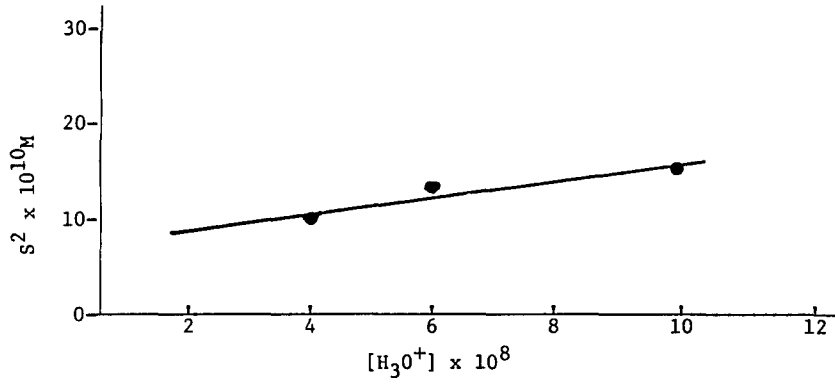
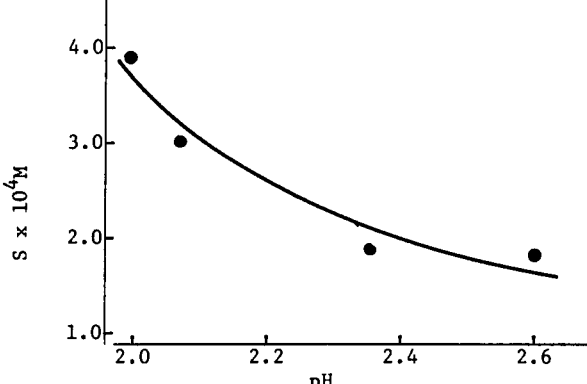


COMPONENTS: (1) Benzenesulfonamide, 4-amino-N-(5-methyl-1,3,4-thiadiazol-2-yl)-, monosilver salt (Ag sulfamethizole); $C_9H_9AgN_4O_2S_2$; [24342-31-2] (2) 4-Morpholinepropanesulfonic acid; $C_7H_{15}NO_4S$; [1132-61-2] (3) 4-Morpholinepropanesulfonic acid, sodium salt; $C_7H_{14}NNaO_4S$; [71119-22-7] (4) Potassium nitrate; KNO_3 ; [7757-79-1] (5) Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Nesbitt, R. U., Jr.; Sandmann, B. J. <i>J. Pharm. Sci.</i> <u>1978</u> , <i>67</i> (7), 1012-17.										
VARIABLES: Hydronium-ion concentration	PREPARED BY: R. Piekos										
EXPERIMENTAL VALUES: <p>Equilibrium values of S^2 (S = total molar solubility) versus $[H_3O^+]$ for Ag sulfamethizole in 0.05M 4-morpholinepropanesulfonic acid buffer at 0.1M ionic strength (KNO_3) and $25 \pm 0.1^\circ C$.</p>  <table border="1" data-bbox="280 624 1120 1008"> <caption>Data points from the experimental values graph</caption> <thead> <tr> <th>$[H_3O^+] \times 10^8$</th> <th>$S^2 \times 10^{10} M$</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>8.5</td> </tr> <tr> <td>4</td> <td>10.5</td> </tr> <tr> <td>6</td> <td>13.5</td> </tr> <tr> <td>10</td> <td>15.5</td> </tr> </tbody> </table>		$[H_3O^+] \times 10^8$	$S^2 \times 10^{10} M$	2	8.5	4	10.5	6	13.5	10	15.5
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AUXILIARY INFORMATION											
METHOD/APPARATUS/PROCEDURE: Mixt of 100 mg Ag sulfamethizole and 25 or 27 ml of the 4-morpholinepropanesulfonic acid buffer were placed in paraffin-coated vials, adjusted to an ionic strength 0.1M with KNO_3 , and rotated end over end in a thermostated bath until equilibrium soly was obtained (3-7 days). After filtration through 20M glass filtering crucibles, the solns were analyzed at $25 \pm 0.1^\circ C$ in paraffin-coated beakers for Ag^+ ions with a silver-ion selective electrode No. 94-16, Orion Res., Cambridge, Mass) standardized at the temp indicated and 0.1M ionic strength. The pH was measured with a triple-purpose pH electrode (Corning Sci. Instruments, Medfield, Mass) standardized using buffers meeting NBS requirements. The buffers were prepd with a total molar concn of 0.05M and adjusted to an ionic strength of 0.1M with KNO_3 .	SOURCE AND PURITY OF MATERIALS: All reagents used were anal or USP grade. Ag sulfamethizole was prepd by the method of Rosenzweig and Fuchs (1) and recrystd from ammonia (2). Water had a sp cond of $(1-10) \times 10^{-7} \text{ ohm}^{-1} \text{ cm}^{-1}$. The buffer soln was from US Biochem. Corp., Cleveland, Ohio (purity not specified). ESTIMATED ERROR: Soly: not specified. Temp: $\pm 0.1^\circ C$ (authors). pH : accuracy ± 0.001 pH unit (authors). REFERENCES: 1. Rosenzweig, S.; Fuchs, W. <i>U.S. pat.</i> 2,536,095 (1951). 2. Sandmann, B.J.; Nesbitt, R. U., Jr.; Sandmann, R. A. <i>J. Pharm. Sci.</i> <u>1974</u> , <i>63</i> , 948.										

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VARIABLES: <p style="text-align: center;">pH</p>	PREPARED BY: <p style="text-align: center;">R. Piekos</p>																																				
EXPERIMENTAL VALUES: Comparison of Total Silver Sulfamethizole Molar Solubility, S, Determined by the Method of Known Subtraction with the Molar Concentration of the Silver Ion Determined by Direct Potentiometry of Identical Samples at $25 \pm 0.1^\circ C$, 0.1M Ionic Strength, in Nitric Acid Buffer <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th colspan="2" style="text-align: center;">pH 1.931</th> <th colspan="2" style="text-align: center;">pH 2.565</th> </tr> <tr> <th style="text-align: center;">$S \times 10^4$</th> <th style="text-align: center;">$[Ag^+] \times 10^9$</th> <th style="text-align: center;">$S \times 10^4$</th> <th style="text-align: center;">$[Ag^+] \times 10^4$</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">4.073</td><td style="text-align: center;">4.052</td><td style="text-align: center;">1.477</td><td style="text-align: center;">1.486</td></tr> <tr><td style="text-align: center;">4.077</td><td style="text-align: center;">4.068</td><td style="text-align: center;">1.491</td><td style="text-align: center;">1.486</td></tr> <tr><td style="text-align: center;">4.088</td><td style="text-align: center;">4.068</td><td style="text-align: center;">1.477</td><td style="text-align: center;">1.492</td></tr> <tr><td style="text-align: center;">4.062</td><td style="text-align: center;">4.036</td><td style="text-align: center;">1.459</td><td style="text-align: center;">1.475</td></tr> <tr><td style="text-align: center;">4.120</td><td style="text-align: center;">4.099</td><td style="text-align: center;">1.482</td><td style="text-align: center;">1.486</td></tr> <tr><td style="text-align: center;">4.080</td><td style="text-align: center;">4.021</td><td style="text-align: center;">1.476</td><td style="text-align: center;">1.475</td></tr> <tr> <td style="text-align: center;">Mean</td> <td style="text-align: center;">4.084</td> <td style="text-align: center;">1.477</td> <td style="text-align: center;">1.483</td> </tr> </tbody> </table>		pH 1.931		pH 2.565		$S \times 10^4$	$[Ag^+] \times 10^9$	$S \times 10^4$	$[Ag^+] \times 10^4$	4.073	4.052	1.477	1.486	4.077	4.068	1.491	1.486	4.088	4.068	1.477	1.492	4.062	4.036	1.459	1.475	4.120	4.099	1.482	1.486	4.080	4.021	1.476	1.475	Mean	4.084	1.477	1.483
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VARIABLES: pH	PREPARED BY: R. Piekos																								
<p>EXPERIMENTAL VALUES: Continued from previous page</p> <p>Calculation of the solubility product of Ag sulfamethizole^a, K_S, at 25±0.1°C and 0.1M ionic strength</p> <table border="1" data-bbox="303 626 1053 949"> <thead> <tr> <th>pH</th> <th>f_o</th> <th>S^2</th> <th>K_S^a</th> </tr> </thead> <tbody> <tr> <td>1.965</td> <td>1.583×10^{-4}</td> <td>1.733×10^{-7}</td> <td>2.74×10^{-11}</td> </tr> <tr> <td>2.102</td> <td>2.526×10^{-4}</td> <td>1.051×10^{-7}</td> <td>2.65×10^{-11}</td> </tr> <tr> <td>2.345</td> <td>5.448×10^{-4}</td> <td>4.693×10^{-8}</td> <td>2.56×10^{-11}</td> </tr> <tr> <td>2.598</td> <td>1.132×10^{-3}</td> <td>2.508×10^{-8}</td> <td>2.85×10^{-11}</td> </tr> <tr> <td colspan="3"></td> <td>Mean $(2.70 \pm 0.12) 10^{-11}$</td> </tr> </tbody> </table> <p>^aK_S reported as mean ±SD</p> <p>^afrom eq. $K_S = f_o S^2$, where $f_o = (1 + \frac{[H_3O^+]}{K_2} + \frac{[H_3O^+]^2}{K_1 K_2})^{-1}$</p> <p>S is the total molar solubility, and K_1 and K_2 are the apparent dissociation constants of the N⁴- (amino) and N¹- (amido) hydrogens of sulfamethizole, respectively.</p>		pH	f_o	S^2	K_S^a	1.965	1.583×10^{-4}	1.733×10^{-7}	2.74×10^{-11}	2.102	2.526×10^{-4}	1.051×10^{-7}	2.65×10^{-11}	2.345	5.448×10^{-4}	4.693×10^{-8}	2.56×10^{-11}	2.598	1.132×10^{-3}	2.508×10^{-8}	2.85×10^{-11}				Mean $(2.70 \pm 0.12) 10^{-11}$
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VARIABLES: pH	PREPARED BY: R. Piekos
EXPERIMENTAL VALUES: Continued from previous page <div data-bbox="500 582 1186 991" style="text-align: center;"> </div> <p data-bbox="432 1022 1077 1134">Equilibrium values of $[Ag^+]^2/[H_3O^+]$ versus $[H_3O^+]$ for silver sulfamethizole in nitric acid buffer at 0.1M ionic strength and $25 \pm 0.1^\circ C$</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
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COMPONENTS:	ORIGINAL MEASUREMENTS: Nesbitt, R. U., Jr.; Sandmann, B. J. <i>J. Pharm. Sci.</i> <u>1977</u> , <i>66</i> (4), 519-22.
VARIABLES: pH	PREPARED BY: R. Piekos
EXPERIMENTAL VALUES: Continued from previous page	
 <p>Molar solubility, S, of Ag sulfamethizole versus pH at 0.1M ionic strength and $25 \pm 0.1^\circ\text{C}$. Key: 0 calculated from equation</p> $S^2 = [\text{Ag}^+]^2 = \frac{[\text{H}_3\text{O}^+]^2 K_s}{K_1 K_2} + \frac{[\text{H}_3\text{O}^+] K_s}{K_2}$	
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COMPONENTS: (1) Acetamide, N-[4-[[[5-methyl-1,3,4-thiadiazol-2-yl)amino]sulfonyl]phenyl]-(acetyl sulfamethylthiadiazole); $C_{11}H_{12}N_4O_3S_2$; [39719-87-4] (2) Phosphoric acid, monopotassium salt; KH_2PO_4 ; [7778-77-0] (3) Water; H_2O ; [7732-18-5]	ORIGINAL MEASUREMENTS: Krüger-Thiemer, E. <i>Arch. Dermatol. Syphilis</i> <u>1942</u> , <i>183</i> , 90-116.
VARIABLES: One temperature: ca 20°C; one pH: 4.37	PREPARED BY: R. Piekos
EXPERIMENTAL VALUES: <p style="text-align: center;">Solubility of acetyl sulfamethylthiadiazole in a 0.735M (10%) KH_2PO_4 solution of pH 4.37 at room temperature (about 20°C) is 0.0066 g% (2.11×10^{-4} mol dm^{-3} solution, compiler).</p>	
AUXILIARY INFORMATION	
METHOD/APPARATUS/PROCEDURE: Acetyl sulfamethylthiadiazole (0.5 g) was dissolved in the 0.735M (10%) KH_2PO_4 soln, shaken for 2 h at room temp (about 20°C), and filtered. The filtrate was treated with equal vol of 2N HCl, and refluxed for 15 min. After proper diln, a 1-cm ³ aliquot was withdrawn, acidified, cooled, and the sulfonamide content was detd colorimetrically by the Marshall method modified by Kimmig (1) using an Authenrieth colorimeter. The pH was detd on an ultraionograph using a glass electrode.	SOURCE AND PURITY OF MATERIALS: Acetyl sulfamethylthiadiazole (source not specified) gave no coloration upon diazotization of its satd soln, thus showing absence of sulfamethylthiadiazole. The source and purity of the remaining materials were not specified. ESTIMATED ERROR: Soly: precision ±5% (author) Temp: not specified pH : ±0.05 pH unit (author) REFERENCES: 1. Kimmig, J. <i>Arch. Dermatol.</i> <u>1938</u> , <i>176</i> , 722; <i>Erg. Hyg.</i> <u>1941</u> , <i>24</i> , 398.

COMPONENTS:				ORIGINAL MEASUREMENTS:			
(1) Acetamide, N-[4-[[[(5-methyl-1,3,4-thiadiazol-2-yl)amino]sulfonyl]phenyl]-acetyl sulfamethylthiadiazole); $C_{11}H_{12}N_4O_3S_2$; [39719-87-4] (2) Phosphoric acid, disodium salt; Na_2HPO_4 ; [7558-94-4] (3) Phosphoric acid, monopotassium salt; KH_2PO_4 ; [7778-77-0] (4) Water; H_2O ; [7732-18-5]				Krüger-Thiemer, E. <i>Arch. Dermatol. Syphilis</i> <u>1942</u> , <i>183</i> , 90-116.			
				PREPARED BY: R. Piekos			
VARIABLES:							
Temperature; pH							
EXPERIMENTAL VALUES:							
Composition of 1/15M phosphate buffer solution				Solubility			
Na_2HPO_4	KH_2PO_4	%Content	pH	Room temp (ca 20°C)		37°C	
				g%	10^3 mol dm^{-3} solution	g%	10^3 mol dm^{-3} solution
1.0	99.0	0.91	4.944	0.0073	0.23	-	-
10.0	90.0	0.91	5.906	0.022	0.70	0.022	0.70
61.1	38.9	0.93	7.005	0.197	6.31	0.274	8.77
9.5	0.5	0.733 ^b	7.51	0.726	23.24	-	-
94.7	5.3	0.95	8.018	0.455	14.57	-	-
^a Calculated by compiler ^b Molar content; 10% buffer solution							
AUXILIARY INFORMATION							
METHOD/APPARATUS/PROCEDURE:				SOURCE AND PURITY OF MATERIALS:			
Acetyl sulfamethylthiadiazole (0.5 g) was dissolved in 10 cm ³ of a buffer soln, shaken for 2 h at 20°C (or left for 48 h at 37°C), and filtered at respective temp. The filtrate was treated with equal vol of 2N HCl and refluxed for 15 min. After proper diln, a 1-cm ³ aliquot was withdrawn, acidified, cooled, and the sulfonamide content was detd colorimetrically (as sulfamethylthiadiazole) by the Marshall method modified by Kimmig (1) using an Authenrieth colorimeter. The pH was detd on an ultraionograph using a glass electrode.				Acetyl sulfamethylthiadiazole (source not specified) gave no coloration upon diazotization of its satd soln, thus showing absence of sulfamethylthiadiazole. The source and purity of the remaining materials were not specified.			
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VARIABLES: pH	PREPARED BY: R. Piekos																										
EXPERIMENTAL VALUES: <p>Solubility of acetyl sulfamethylthiadiazole in buffers of varying mixtures of $Na_2HPO_4 \cdot 7H_2O$ (71.6 g/l distilled water; 0.27 mol dm^{-3}, compiler) and KH_2PO_4 (36.3 g/l distilled water; 0.27 mol dm^{-3}, compiler) at 37°C.</p> <table border="1" data-bbox="392 673 1178 1070"> <thead> <tr> <th rowspan="2">Equilibrium pH</th> <th colspan="2">Solubility (based on sulfamethylthiadiazole)</th> </tr> <tr> <th>mg/100 ml</th> <th>10^2 mol dm^{-3} ^a</th> </tr> </thead> <tbody> <tr><td>4.5</td><td>41</td><td>0.151</td></tr> <tr><td>5.0</td><td>50</td><td>0.185</td></tr> <tr><td>5.5</td><td>71</td><td>0.262</td></tr> <tr><td>6.0</td><td>102</td><td>0.377</td></tr> <tr><td>6.3</td><td>260</td><td>0.962</td></tr> <tr><td>6.6</td><td>630</td><td>2.33</td></tr> <tr><td>7.3</td><td>2400</td><td>8.878</td></tr> </tbody> </table> <p>^a Calculated by compiler</p>		Equilibrium pH	Solubility (based on sulfamethylthiadiazole)		mg/100 ml	10^2 mol dm^{-3} ^a	4.5	41	0.151	5.0	50	0.185	5.5	71	0.262	6.0	102	0.377	6.3	260	0.962	6.6	630	2.33	7.3	2400	8.878
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AUXILIARY INFORMATION																											
METHOD/APPARATUS/PROCEDURE: Solns were prepd by adding an excess of acetyl sulfamethylthiadiazole to 10 ml of buffer soln at each pH level in 18 x 150-mm test tubes, stoppering the tubes, placing them in water bath at 37°C with gentle agitation for 24 h. The solute was then hydrolyzed with 5% H_2SO_4 for 1 h to liberate the free sulfonamide. One-ml aliquot of the hydrolyzate was accurately pipetted into a volumetric flask for diln and analysis. The sulfonamide was assayed colorimetrically by the method of Bratton and Marshall as described in detail by Biamonte and Schneller (1). A standard curve was prepd using accurately prepd standard solutions.	SOURCE AND PURITY OF MATERIALS: Neither source nor purity of the reagents were specified. Distilled water was used. ESTIMATED ERROR: Soly: ave values of duplicate runs are reported (authors). Temp and pH: not specified. REFERENCES: 1. Biamonte, A. R.; Schneller, G. E. <i>J. Am. Pharm. Assoc., Sci. Ed.</i> <u>1952</u> , <u>41</u> , 341.																										

