was washed with H_2O, dried ($MgSO_4$), and concd. The yield of crude product was 89% (C=O, 1780 cm^{-1}). The chloroformate was converted into the desired carbamate by adding 1 equiv each of an amine (ethylenimine or Me_2NH) and Et_3N. The conditions and work-up procedure paralleled those just described.

Citronellol was converted into the P derivatives by treatment with 1 equiv each of the required acid halide and Et_3N.

Citronellylamine Derivatives.—The amine was prepared by LAH reduction of the oxime.[8] However, yields were variable and depended largely on the freshness of the reducing agent. Citronellylamine reacted with hexamethylene diisocyanate in Et_2O exothermically to produce the diurea as a ppt. The amine was converted into its other listed derivatives by reaction with the acid halide and Et_3N as described for citronellol.

Epoxidation of the ethyl (3,7-dimethyl-6-octenyl)carbamate was carried out with 1 equiv of *m*-chloroperbenzoic acid in CH_2Cl_2. The mixture was held at 5–10° during addn of the olefins and was allowed to stand at room temp overnight. After extraction with Na_2CO_3, the organic soln was dried (Na_2SO_4), concd, and dist by using a short-path distn apparatus.

The nmr spectrum of *P,P*-bis(1-aziridinyl)-*N*-(3,7-dimethyl-6-octenyl)phosphinic amide showed the following absorptions: 0.88 d (CH_3CH), 1.57 and 1.65 (cis and trans allylic Me, respectively), 1.93 d (—N  , J_{PH} = 15 Hz), 5.05 (vinyl H).

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(8) D. Arigoni and O. Jeger, *Helv. Chim. Acta*, **37**, 881 (1954).

Synthesis of New Urethans. *p*-Ethylsulfonyl- and *p*-Dimethylsulfamoylcarbanilic Acid Esters

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Several *p*-arylsulfonylcarbanilic acid esters were reported to have antitumor activities.[1] New urethans listed in Table I were prepared by Curtius degradation of appropriate benzoyl azides.

The compounds proved to be inactive[2] (T/C = 89–102% at 400 mg/kg) against the L-1210 lymphoid leukemia in BDF_1 mice, and the Walker carcinosarcoma 256 in random-bred albino rats.

Experimental Section[3]

***p*-Ethylsulfonylbenzoyl Azide.**—*p*-Ethylsulfonylbenzoic acid ethyl ester (mp 64°) was prepared by known methods from *p*-ethylsulfonylbenzoic acid[4] and transformed to *p*-ethylsulfonylbenzoylhydrazide (mp 164°). This hydrazide (2.28 g, 0.01 mole) in 20 ml of 50% AcOH was stirred vigorously at ice bath temperature to give 2.27 g of azide (95%) mp 125° dec. *Anal.* ($C_9H_9N_3O_3S$) C, H, N.

p-Dimethylsulfamoylbenzoyl azide was prepared similarly from *p*-dimethylsulfamoylbenzoyl hydrazide[5] as a white powder (91%), mp 109° dec. *Anal.* ($C_9H_{10}N_4O_3S$) C, H, N.

(1) Al. Mavrodin, C. Demetrescu, and C. Chirita, *Rev. Roum. Chim.*, **10**, 1025 (1965).

(2) Screening results were supplied by CCNCS of the National Institutes of Health, Bethesda, Md.

(3) Melting points were taken on a Kofler hot stage microscope and were uncorrected. The ir spectra were determined with a Leitz model III spectrograph. Nmr spectra were obtained on a Varian A60A instrument.

(4) H. Sato, *Yakugaku Zasshi*, **72**, 74 (1952).

TABLE I

R	R'	Mp, °C	Yield, %	Formula[a]
Et	Et	135	89	$C_{11}H_{15}NO_4S$
Et	*t*-Bu	129	93	$C_{13}H_{19}NO_4S$
Et	*n*-Hexyl	109	95	$C_{15}H_{23}NO_4S$
Et	*n*-Octyl	124	88	$C_{17}H_{27}NO_4S$
Et	Allyl	121	86	$C_{12}H_{15}NO_4S$
Et	Benzyl	136	96	$C_{16}H_{17}NO_4S$
Et	Cholesteryl	222	92	$C_{36}H_{55}NO_4S$
Et	Cyclopentyl	142	79	$C_{14}H_{19}NO_4S$
Et	Cyclohexyl	139	83	$C_{15}H_{21}NO_4S$
Et	Cycloheptyl	120	85	$C_{16}H_{23}NO_4S$
Et	Cyclooctyl	127	79	$C_{17}H_{25}NO_4S$
Et	*o*-$MeOC_6H_4$	191	80	$C_{16}H_{17}NO_5S$
Et	Thymyl	143	84	$C_{19}H_{23}NO_4S$
Et	6-Allyl-4-$MeOC_6H_3$	154	73	$C_{19}H_{21}NO_5S$
Et	Ph_2CH	195	76	$C_{22}H_{21}NO_4S$
Et	α-Cyclohexyl-α-methylbenzyl	136	79	$C_{23}H_{29}NO_4S$
Et	*p*-Menth-3-yl	170	92	$C_{19}H_{29}NO_4S$
Me_2N	Et	127	71	$C_{11}H_{16}N_2O_4S$
Me_2N	*i*-Pr	159	76	$C_{12}H_{18}N_2O_4S$
Me_2N	*t*-Bu	169	78	$C_{13}H_{20}N_2O_4S$
Me_2N	*n*-Am	105	72	$C_{14}H_{22}N_2O_4S$
Me_2N	*n*-Hexyl	95	69	$C_{15}H_{24}N_2O_4S$
Me_2N	*n*-Octyl	107	68	$C_{17}H_{28}N_2O_4S$
Me_2N	Allyl	110	73	$C_{12}H_{16}N_2O_4S$
Me_2N	Cyclopentyl	170	86	$C_{14}H_{20}N_2O_4S$
Me_2N	Cyclohexyl	176	81	$C_{15}H_{22}N_2O_4S$
Me_2N	Cycloheptyl	170	83	$C_{16}H_{24}N_2O_4S$
Me_2N	Cyclooctyl	174	79	$C_{17}H_{27}N_2O_4S$
Me_2N	Benzyl	142	88	$C_{16}H_{18}N_2O_4S$
Me_2N	Cholesteryl	220	80	$C_{36}H_{56}N_2O_4S$
Me_2N	Ph_2CH	195	91	$C_{22}H_{22}N_2O_4S$
Me_2N	Ph_3C	132	65	$C_{28}H_{26}N_2O_4S$
Me_2N	Thymyl	155	78	$C_{19}H_{24}N_2O_4S$
Me_2N	*p*-Menth-3-yl	173	76	$C_{19}H_{30}N_2O_4S$
Me_2N	*o*-Methoxyphenyl	155	69	$C_{16}H_{18}N_2O_5S$
Me_2N	6-Allyl-4-$MeOC_6H_3$	193	70	$C_{19}H_{22}N_2O_5S$
Me_2N	α-Cyclohexyl-α-methylbenzyl	120	64	$C_{23}H_{30}N_2O_4S$

[a] All compounds were analyzed for C, H, N, and the results were satisfactory. Similarly ir and nmr spectra were as expected.

***p*-Ethylsulfonylcarbanilic Acid Benzyl Ester.**—*p*-Ethylsulfonylbenzoyl azide, (2.3 g, 0.01 mole) and 2.48 g (0.02 mole) of benzyl alcohol was refluxed for 1 hr in 20 ml of dry PhMe. The solvent was evaporated and the residue was recrystallized from dil EtOH to give 2.9 g (90%) of white plates, mp 136°. The other compounds listed in Table I were prepared in a similar way, except for the Et esters which were prepared by 3-hr refluxing of the appropriate azide in 10 times its weight of abs EtOH.

(5) H. Shirai, M. Yoneda, and N. Oda, *Nagoya Shiritsu Daigaku, Yakugakubu Kiyo*, **2**, 45 (1954); *Chem. Abstr.*, **50**, 11337 (1956).

Synthesis of 5,7-Dimethoxyindole[1]

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The predominance of the indole nucleus and its methoxy analogs in many biologically active systems

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