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FRIDMAN, S. G.

Kiprianov, A. I. and Fridman, S. G. "Quaternary heterocyclic a methine salt derivatives", Ukr. khim. zhurnal, 1948, Issue 1, p. 29-44, - Bibliog: 15 items.

SO: U-3742, 11 March 53, (Letopis 'nykh Statey, No. 10, 1949).

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FRIDMAN, S.G.

Aminoalkyl esters of thiazolecarboxylic acids. III. 2-Amino-6-benzothiazolecarboxylic acid. S. G. Fridman. *Ukrain. Khim. Zhur.* 16, No. 3, 391-40[illegible]; [illegible] 46, 3533c, 10150h.—To 12 g. 2-benzothiazolecarboxylic acid in 30 ml. concd. H_2SO_4 was slowly added 9 ml. HNO_3 (d. 1.35) at room temp., the mixt. kept 12 hrs. at room temp., poured on ice, and the crude product washed with H_2O, dried, taken up in concd. H_2SO_4, and uptd. with H_2O (ice cooling necessary), yielded 85% *6-nitro-2-benzothiazolecarboxylic acid* (I) yellow, decomp. 115°; *Ba salt*, yellow needles, does not m. 300°; NH_4 salt, yellow, m. 210°; *Ag salt*, colorless. Heating I with abs. EtOH and concd. H_2SO_4 to 50-5° gave 40% *6-nitrobenzothiazole*. I heated with $SOCl_2$ to 60-70° formed a substance, m. 187-8°, contg. Cl that is unattacked by refluxing with EtOH or MeOH and identified as *2-chloro-6-nitrobenzothiazole*. I and PCl_5 behave similarly. Heating 13.6 g. *p*-$H_2NC_6H_4CO_2CH_2CH_2NEt_2HCl$ in 50 ml. EtOH with a triturated mixt. of 13.5 g. $CuCl_2$ and 7.6 g. NH_4CNS 15 min. at 60°, and adding 40 ml. dil. HCl gave a ppt., which was extd. repeatedly with hot H_2O and the ext. neutralized with NH_4OH, yielding 43% *2-diethylaminoethyl 2-amino-6-benzothiazolecarboxylate*, m. 155° (from EtOH); *HCl salt*, m. 193-4° (from EtOH). Similarly, 6.1 g. *p*-$H_2NC_6H_4CO_2(CH_2)_3NEt_2HCl$ in 50 ml. EtOH treated with 3 ml. 30% alc. HCl, 6.5 g. $CuCl_2$, and 3.6 g. NH_4CNS gave 3.7 g. *3-diethylaminopropyl 2-amino-6-benzothiazolecarboxylate*, m. 146° (from dil. EtOH). Similarly was formed 60% *piperidinoethyl ester*, m. 186°. G. M. K.

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CA

Aminoalkyl esters of thiazolecarboxylic acids. I. 2-Benzothiazolecarboxylic acid and 6-benzothiazolecarboxylic acid. S. G. Fridman (Inst. Org. Chem., Acad. Sci. Ukr. S.S.R.). *Zhur. Obshchei Khim.* (J. Gen. Chem.) **20**, 1191–8 (1950).—*2-Benzothiazolecarboxylic acid* (I), m. 108° (5 g.), warmed 2 hrs. with 6 g. PCl_5 on a water bath, then treated with ice water, gave 91% of the yellow *acid chloride*, m. 100–2° (from C_6H_6). Warming this with MeOH 30 min. gave the *Me ester of* I, m. 90° (from dil. EtOH), while EtOH gave the *Et ester*, m. 70–1°. $Et_2NCH_2CH_2OH$ in C_6H_6 gave after refluxing 3 hrs. the *2-diethylaminoethyl ester*, m. 184° [from $(ClCH_2)_2$]; *picrate*, m. 162° (from EtOH). Similarly, $Et_2N(CH_2)_3OH$ gave 92% *3-diethylaminopropyl ester*, decomp. 142° (from EtOH-Me_2CO); *picrate*, m. 125° (from Me_2CO). Similarly, 1-piperidinoethanol gave 85% *2-(1-piperidyl)-ethyl ester*, decomp. 192° (from EtOH-Me_2CO). Addn. of 20 g. powd. *p*-$MeC_6H_4NH_2$ slowly to 70 g. $CuCl_2$ and 81.6 g. KCNS, and warming the mixt. with 40 ml. AcOH 15 min. to 50° gave, on extn. with hot H_2O and addn. of NH_4OH, almost 100% *6-methyl-2-aminobenzothiazole*, m. 130°. This (70 g.) added with stirring to 200 g. KOH and 200 ml. H_2O at 100°, followed by heating to 135° until NH_3 evolves, then to 150° (spontaneous), diln. with H_2O, and neutralization with HCl, gave *5-methyl-2-aminothiophenol*, which, in the crude state, boiled 3 hrs. with 100 g. 80% HCO_2H and a little Zn, yielded on neutralization with NaOH 70% *6-methylbenzothiazole*, b. 251–2°. This (20 g.) boiled with 200 g. H_2O with addn. of 40 g. $KMnO_4$ gave 11.5 g. *6-benzothiazolecarboxylic acid*, m. 245° (from AcOH); this boiled with excess $SOCl_2$ gave the corresponding *acid chloride-HCl*, m. 162–4°, which with $NaHCO_3$ gave the free *acid chloride*, m. 125° (from C_6H_6). Its reactions with corresponding alcs. gave the following esters: *Me* (85%), m. 103° (from EtOH); *Et*, m. 64° (from dil. EtOH), *2-diethylaminoethyl*, decomp. 178° [from $(CH_2Cl)_2$] (*picrate*, m. 172°); *3-diethylaminopropyl* (80%), m. 166° (*picrate*, m. 141°); and *2-(1-piperidyl)ethyl* (83%), decomp. 290° (from AcOH). The NH_4OH gave the *amide*, m. 211° (from AcOH). The aminoalkyl esters cited above were devoid of anesthetic properties.

G. M. Kosolapoff

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Aminoalkyl esters of thiazolecarboxylic acids. I. 2-benzothiazolecarboxylic and 6-benzothiazolecarboxylic acids. S. G. Fridman. *J. Gen. Chem. U.S.S.R.* 20, 1235-42(1950)(Engl. translation).—See *C.A.* 45, 1579i.
R. M. S.

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Aminoalkyl esters of thiazolecarboxylic acids. II. 2-Phenyl-6-benzothiazolecarboxylic acid and 2-(p-aminophenyl)-6-benzothiazolecarboxylic acid. S. G. Fridman. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 1807-15(1950).—5,2-Me(H$_2$N)C$_6$H$_3$SH (I) (33 g.) heated with 45 g. BzCl 1 hr. on a steam bath the product heated with 5% NaOH, and the residue extd. with hot HCl, gave 46% *6-methyl-2-phenylbenzothiazole*, m. 125° (from dil. EtOH). This (1½ g.) boiled in AcOH with 16.8 g. KMnO$_4$ and 20 ml. H$_2$SO$_4$ until colorless, yielded 62% *2-phenyl-6-benzothiazolecarboxylic acid*, m. 261° (from AcOH); heating with PCl$_5$ in PhCl 1.5 hrs. at 100° gave 95% of the *chloride*, m. 150°. The chloride heated with *Et$_2$NCH$_2$CH$_2$OH* in C$_6$H$_6$ 2 hrs. gave the *2-diethylaminoethyl ester*, isolated as the *HCl salt*, m. 219–20° [from (CH$_2$Cl)$_2$]; *picrate*, m. 169° (from Me$_2$CO). The *3-diethylaminopropyl ester* [*HCl salt*, m. 205–6° (from (CH$_2$Cl)$_2$]; *picrate*, m. 157°]; and *2-(1-piperidyl)ethyl ester* (78% yield) [*HCl salt*, m. 236–7° (from (CH$_2$Cl)$_2$)] were similarly prepd. I (20 g.) heated with 38 g. *p*-O$_2$NC$_6$H$_4$COCl 1 hr. on a steam bath gave 52% *6-methyl-2-(p-nitrophenyl)benzothiazole*, m. 219° [from AcOH, then (CH$_2$Cl)$_2$], which (12.5 g.) treated in 100 ml. 70% H$_2$SO$_4$ with 0.5 ml. concd. HCl and then, with slow heating on a steam bath, with 15 g. powd. K$_2$Cr$_2$O$_7$ added in small portions, gave, after the usual treatment, 67% *Na salt* of *2-(p-nitrophenyl)-6-benzothiazolecarboxylic acid*; the *free acid*, m. 320° (from AcOH), heated with PCl$_5$ in PhCl gave the *chloride* (97%), m. 286° (from C$_6$H$_6$), which, heated with MeOH, gave the *Me ester*, m. 259–60° (from C$_6$H$_6$); similarly prepd. were: the *Et ester*, m. 224° (from C$_6$H$_6$), *2-diethylaminoethyl ester* [*HCl salt*, m. 238° (decompn., from EtOH)]; *3-diethylaminopropyl ester* (80%), m. 159–60° (from EtOH) [*HCl salt*, m. 234° (decompn.; from EtOH)]; *2-(1-piperidyl)ethyl ester* (80%) [*HCl salt*, m. 244° (from EtOH)]; the *amide*, from the chloride and NH$_4$OH on a steam bath, m. 206–7° (from AcOH). Reduction of the nitro derivs. by heating with Sn and HCl gave the corresponding *derivs.* of *2-(p-aminophenyl)-6-benzothiazolecarboxylic acid*: *Me ester* (50%), m. 218° (from dil. EtOH); *Et ester* (44%), m. 234–5°; *amide* (38%), m. 270–1° (from dil. EtOH); *2-diethylaminoethyl ester* (41%), m. 139° (from dil. EtOH); *3-diethylaminopropyl ester* (46%), m. 102° (from dil. EtOH); *2-(1-piperidyl)ethyl ester* (45%), m. 150°.

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Fridman, S.G.

Thiocyanation of o-nitroaniline. S. G. Fridman. J. Gen. Chem. U.S.S.R. 23, 111-13(1953)(Engl. translation).—See C.A. 48, 673a.
H. L. H.

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FRIDMAN, S.G.

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Thiocyanation of o-nitroaniline. S. G. Fridman. *Zhur. Obshchei Khim.* 23, 116-18(1953).—It is shown that Blomquist and Diuguid (*C.A.* 42, 168c) obtained 2-nitro-4-thiocyanoaniline which they erroneously assumed to be 2-amino-4-nitrobenzothiazole. On acetylation of their product they obtained 2-nitro-4-thiocyanoacetanilide and not 2-acetylamido-4-nitrobenzothiazole; further on diazotization they obtained 2-nitro-4-thiocyanochlorobenzene and not 2-chloro-4-nitrobenzothiazole. Following Challenger and Peters (*C.A.* 22, 3152) $PhNH_2$ was converted to p-thiocyanoaniline, which gave the *N*-Ac deriv., which nitrated to o-nitro-p-thiocyanoacetanilide, which gave o-nitro-p-thiocyanoaniline. Mixed m.p. detns. of 2-nitro-4-thiocyanoacetanilide and B. and D.'s alleged 2-amino-4-nitrobenzothiazole gave no depression; nor was a depression observed in mixed m.ps. of 2-nitro-4-thiocyanoaniline and alleged 2-amino-4-nitrobenzothiazole. Since empirical formulas of the thiocyanoanilines and the benzothiazoles are identical, analytical data could not be used for decision as to structure as was done by B. and D. Authentic o-nitro-p-thiocyanoaniline m. 113°; *N*-Ac deriv., m. 1[illegible]; o-nitro-p-thiocyanochlorobenzene, m. 63°.

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FRIDMAN, S.G.

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Thiazolyl derivatives of ethylene and trimethylenediamines. I. S. G. Fridman. Zhur. Obshchei Khimii 23, 278-83(1953). The following substances were prepd. for tests as antihistaminic agents. All showed activity, but the best were below Pyribenamine; the most active was *N,N*-dimethyl-*N'*-benzyl-2-(4-methylthiazolyl)ethylenediamine. $Me_2NC_2H_4OH$ (142.4 g.) with 700 ml. HBr (d. 1.42) gave 80% *$Me_2NCH_2CH_2Br.HBr$*, m. 289°, after washing with Me_2CO. 2-Piperidinoethanol and $SOCl_2$ gave *2-piperidinoethyl chloride-HCl*, m. 229-31°. $(CH_2)_3ClBr$ and piperidine gave *3-piperidinopropyl chloride*, b_4 68-70°. *p-$MeOC_6H_4CH_2Cl$*, from PhOMe, CH_2O, and HCl, b_6 105-10°. *2-Bromothiazole*, by the Sandmeyer reaction from 2-aminothiazole, b_{22} 74°. Heating 5 g. benzylthiourea and 2.5 ml. $AcCH_2Cl$ on a steam bath 1 hr., soln. in H_2O, extn. with Et_2O, addn. of 10% NaOH, and filtration gave 90% *2-benzylamino-4-methylthiazole*, m. 98°; *picrate*, m. 192-4°. Refluxing 27.4 g. *p*-phenetidine, 18.4 g. 2-piperidinoethyl chloride-HCl, and 27.6 g. dry K_2CO_3 in 100 ml. MePh 8 hrs., followed by addn. of H_2O and extn. of the aq. layer with Et_2O, gave 60% *N-(2-piperidinoethyl)-p-phenetidine*, b_3 173-5°; *2HCl salt*, m. 174°. Analogously were obtained: 70% *$PhNHCH_2CH_2NMe_2$*, b_4 100-5° (*di-HCl salt*, m. 176-7°); *p-$EtCO_2C_6H_4NHCH_2CH_2NMe_2$*, 32%, b_4 181-5° (*HCl salt*, m. 159-61°; *picrate*, m. 137-8°); *p-$BrC_6H_4NHCH_2CH_2NC_5H_{10}$*, 32%, b_4 180-1°, m. 44° (*HCl salt*, m. 208°); *$PhCH_2NHCH_2CH_2NMe_2$*, 30%, b_4 115-17° (*di-HCl salt*, m. 205-7°). Heating 20.4 g. $Me_2N(CH_2)_3NH_2$ in 20 ml. pyridine with 12.6 g. *p-$MeOC_6H_4CH_2Cl$* 15 hrs., adding 15 g. solid NaOH, heating 0.5 hr. on steam bath, filtering, and distg. gave 45% *N,N-dimethyl-N'-(p-methoxybenzyl)trimethylenediamine*, b_4 155-60°; di-HCl salt, m. 189-9°. Refluxing 5.5 g. $Me_2NCH_2CH_2NHPh$ in 10 ml. pyridine with 5.5 g. 2-bromothiazole 12 hrs., heating 20 min. with 10 g. solid NaOH, filtering, and distg. gave 1.45 g. *N,N-dimethyl-N'-phenyl-N'-(2-thiazolyl)ethylenediamine*, b_4 145-50°; *perchlorate*, m. 109°. Similarly was obtained the *N'-benzyl analog*, 40%, b_4 183-5°; *perchlorate*, m. 139°; its *picrate* could not be obtained in solid state (cf. U.S. 2,440,730, *C.A.* 43, 1914). Similarly was obtained *N,N-dimethyl-N'-(p-methoxybenzyl)-N'-(2-thiazolyl)-trimethylenediamine*, b_4 185-90°; the product was impure and none of its salts were obtained in solid state. Heating 9.0 g. 2-benzylamino-4-methylthiazole, 4.6 g. $NaNH_2$,

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an 1 75 ml. MePh 2 hrs., cooling, adding 14 g. $Me_2NCH_2CH_2Br.HBr$, and boiling 12 hrs. gave *N,N-dimethyl-N'-benzyl-N'-(4-methyl-2-thiazolyl)ethylenediamine*, b_4 173-95° (crude); the *perchlorate*, m. 144°, with Na_2CO_3 gave the pure free *base*, an oil, yielding a hygroscopic di-HCl salt. Refluxing 5.55 g. Na salt of 2-sulfanilamidothiazole with 3.2 g. 3-piperidinopropyl chloride in EtOH 3 hrs. gave nearly 100% *N'-(2-thiazolyl)-N'-(3-piperidinopropyl)sulfanilamide*, m. 180° (from EtOH); *mono-HCl salt*, m. 203-4°. II. *Ibid.* 284-90.—The following intermediates were obtained by condensation of amines with dialkylaminoalkyl halides as described in Part I (above): $PhNHCH_2CH_2NC_5H_{10}$, 70%, b_4 166-7° (*di-HCl salt*, m. 174-5°; *dipicrate*, m. 160°); $PhNHCH_2CH_2CH_2NC_5H_{10}$, 80%, b_1 143-5° (*di-HCl* salt, m. 223-9°); $p\text{-}MeC_6H_4NHCH_2CH_2NMe_2$, 63%, b_4 120-3° (*di-HCl salt*, m. 175-6°); $p\text{-}MeOC_6H_4NHCH_2CH_2NMe_2$, 66%, b_4 131-3° (*di-HCl salt*, m. 165-6°); *p-EtO analog*, 65%, b_4 133-5° (*di-HCl salt*, m. 160-1°); $PhCH_2NHCH_2CH_2CH_2NMe_2$, 53%, b_6 137-3° (*di-HCl salt*, m. 207°). Heating 42.6 g. $Me_2NCH_2CH_2NHPh.2HCl$ with 27 g. NH_4CNS in 100 ml. PhCl 16 hrs. at 100°, filtration, soln. of the ppt. in hot H_2O, clarification, and cooling gave 50% colorless $PhN(CSNH_2)CH_2CH_2NMe_2.HCNS$, m. 169-70° (from BuOH); Na_2CO_3 does not liberate the free base, but treatment with 10% NaOH gave the free *base*, m. 131-2° (from BuOH); *HCl salt*, m. 193°. Similarly were prepd: 45% $PhN(CSNH_2)CH_2CH_2NC_5H_{10}$, m. 114-15°; $PhN(CSNH_2)CH_2CH_2CH_2NC_5H_{10}$, 40%, m. 112°; 52% $p\text{-}MeC_6H_4N(CSNH_2)CH_2CH_2NMe_2$, m. 130°; *p-MeO analog*, 50%, m. 146°; *p-EtO analog*, 55%, m. 137-8°; $PhCH_2N(CSNH_2)CH_2CH_2NMe_2$, 38%, m. 105°; $PhCH_2N(CSNH_2)CH_2CH_2CH_2NMe_2$, 23%, m. 102°. (Dialkylaminoalkyl)arylamines with neg. substituents in the β-position form only mono-HCl salts and do not form thiourea derivs. To 4.6 g. $PhN(CSNH_2)CH_2CH_2NMe_2$ was added 5 ml. $AcCH_2Cl$, resulting in a delayed vigorous reaction; the mixt. heated 1 hr. at 80-90°, dild. with H_2O, extd. with Et_2O (to remove $AcCH_2Cl$ excess), made alk., extd. with Et_2O, and the dried ext. evapd. gave 5.1 g. *N,N-dimethyl-*

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N'-phenyl-N'-(4-methyl-2-thiazolyl)ethylenediamine, m. 61-2°; *dipicrate*, m. 185°; *di-HCl salt*, m. 192°. The same product is obtained in the same yield from the HCNS or HCl salt instead of the free base. Similarly were obtained: 76% *1-[2-(N-(4-methyl-2-thiazolyl)anilino)-ethyl]-piperidine*, b_4 180-3° (*dipicrate*, m. 179°; *di-HCl salt*, hygroscopic); *anilinopropyl analog*, 85% (*dipicrate*, m. 185°; *di-HCl salt*, m. 164°); *N,N-dimethyl-N'-p-tolyl-N'-(4-methyl-2-thiazolyl)ethylenediamine*, 84%, b_4 170-3° (*dipicrate*, m. 189°; *di-HCl salt*, hygroscopic); *N'-p-anisyl-analog*, 91%, m. 47-8° (*dipicrate*, m. 201°; *di-HCl salt*, m. 144-5°); *N'-p-phenetyl analog*, 78%, m. 68.5° (*dipicrate*, decomp. 192°; *di-HCl salt*, decomp. 139-40°); *N'-benzyl analog*, 82%, b_4 171-4° (*perchlorate*, m. 144°); *N,N-dimethyl-N'-p-phenetyl-N'-(4-phenyl-2-thiazolyl)ethylenediamine*, m. 69° (*HBr salt*, m. 213-5°); *N,N-dimethyl-N'-benzyl-N'-(4-methyl-2-thiazolyl)trimethylenediamine*, 84%, b_4 180-2° (*dipicrate*, m. 177°; *di-HCl salt*, hygroscopic). All the above products have antihistaminic properties but not at practical levels.

G. M. Kosolapoff

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FRIDMAN, S.G.

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USSR.

Thiazolyl derivatives of ethylene- and trimethylenediamines. I. II. S. G. Fridman. *J. Gen. Chem. U.S.S.R.* 23, 291-6, [illegible] (Engl. translation).—See *C.A.* 48, 3344e, 3345b. H. L. H.

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FRIDMAN, S.G.

USSR

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Thiocarbocyanines with aryloxy groups in 8,10-positions. A. I. Kiprianov, Zh. M. Ivanova, and S. G. Fridman. *Ukrain. Khim. Zhur.* 20, 641-5(1954)(in Russian).—The following 2-aryloxymethylbenzothiazoles (I) [aryl = (*a*) Ph, (*b*) *p*-ClC_6H_4, (*c*) *p*-$MeOC_6H_4$, (*d*) *o*-$MeOC_6H_4$ (*e*) 1-$C_{10}H_7$, and (*f*) 2-$C_{10}H_7$] are prepd. by condensing *o*-$H_2NC_6H_4SH$ with $ArOCH_2CO_2H$ (aryl group, % yield, and m.p. given): *a*, 81, 86°; *b*, 71, 118°; *c*, 71, 123°; *d*, 79, 80°; *e*, 76, 111-12°; *f*, 88, 119°. Quaternary salts (II) of the following I are prepd. by heating I and *p*-$MeC_6H_4SO_3Et$ (1:1.1 molar ratio) 3 hrs. at 135-40°, washing the mass with Me_2O, and crystg. from H_2O (aryl group, % yield, and m.p. given): *a*, 27, 157-8°; *b*, 61, 155°; *c*, 55, 105-7°; *d*, 47, 105°; *e*, 59, 160-2°; *f*, 61, 181-2°. 8,10-Diaryloxythiocarbocyanine dyes (III) are obtained by heating 5 ml. dry C_5H_5N, 1 g. of the following II, and 0.6 g. *o*-formate 1 hr. at 115-20°, dilg. with EtOH, and adding hot aq. KI or $NaClO_4$ to the boiling mixt. (aryl group, anion, % yield, m.p., and max. absorption spectra in mμ given): *a*, I^-, 30, 223-4°, 585; *b*, ClO_4^-, 20, 239-1°, 585; *c*, I^-, 15.5, 196-7°, 591; *d*, I^-, 14, 161, 590; *e*, ClO_4^-, 36, 236-8°, 588; *f*, I^-, 11, 166-8°, 588. Styryl dyes (IV) are prepd. by heating equimolar amts. of the following II and *p*-$Me_2NC_6H_4CHO$ 20 min. at 135° in Ac_2O, adding hot aq. KI or $NaClO_4$, and crystg. from EtOH (aryl group, anion, % yield, m.p., and absorption spectra in mμ given): *a*, I^-, 38, 210-1°, 520; *b*, ClO_4^-, 97, 223-5°, 520; *c*, ClO_4^-, 85, 196-7°, 520; *d*, ClO_4^-, 91, 212-15°, 520; *e*, I^-, 95, 102-4°, 522; *f*, ClO_4^-, 93, 182-5°, 522. Introduction of 2 oxyaryl radicals in the 8- or 8,10-positions shifts the absorption spectra (V) of the dyes, decreasing it by 8-10 mμ and IV and increasing it by 27-33 mμ for III; the V of the analogous unsubstituted dyes 530 and 553 mμ. Cf. Brooker and White, *C.A.* 44, 7684.

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FRIDMAN, S. G.

USSR/Chemistry

Card 1/1

Authors : Fridman, S. G.

Title : 2-Alkoxymethyl- and 2-aryloxymethyl-6-aminobenzthiazoles

Periodical : Zhur. Obshchei Khim. 24, Ed. 4. 642 - 654, April 1954

Abstract : The synthesis of 2-alkoxymethyl- and 2-aryloxymethyl-6-aminobenzthiazoles can be accomplished in two ways: 1) through condensation of o-aminophenylmercaptan with alkoxyacetic acids we obtain 2-alkoxymethylbenzthiazoles and then nitrate the obtained bases and 2) through condensation of 5-nitro-2-aminophenylmercaptan with alkoxy-and aryloxyacetic chlorides we obtain 2-alkoxymethyl-and 2-aryloxymethyl-6-nitrobenzthiazoles. By reduction of the 6-nitro derivatives the author hoped to obtain interesting amines. Twenty-five references; 5 USSR since 1906; 4 German since 1893; 2 Swiss since 1933; 1 French-1947; 13 English since 1928. Tables.

Institution : Institute of Organic Chemistry at the Acad. of Sciences Ukr-SSR

Submitted : October 15, 1953

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2-Alkoxymethyl and 2-aryloxymethyl-5-aminobenzothiazoles. S. G. Fridman. *J. Gen. Chem. U.S.S.R.* 24, 681-83(1954)(Engl. translation).—See *C.A.* 49, 6231a.
H. L. H.

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FRIDMAN, S. G.

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Card 1/1

Author : Fridman, S. G.

Title : 4-alkoxymethyl- and 4-aryloxymethyl-2(p-aminophenyl)-thiazoles

Periodical : Zhur. Ob. Khim. 24, Ed. 5, 909 - 916, May 1954

Abstract : Numerous 4-alkoxymethyl-2-phenylthiazoles were synthesized. Nitration of the latter yielded homologous p-nitrophenyl derivatives. The reaction of 4-chloromethyl-2-(p-nitrophenyl)-thiazole with phenols resulted in the formation of homologous aryloxy derivatives. Reduction of 4-alkoxymethyl- and 4-aryloxymethy-2-(p-nitrophenyl)-thiazoles produced homologous amines. Four references. Tables.

Institution : Acad. of Scs. Ukr-SSR, Institute of Organic Chemistry

Submitted : December 7, 1953

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

USSR/Chemistry

Card : 1/1

Authors : Fridman, S. G.

Title : 2-alkoxymethyl-and 2-aryloxymethyl-4-(p-aminophenyl)-thiazoles

Periodical : Zhur. Ob. Khim., 24, Ed. 6, 1059 - 1063, June 1954

Abstract : Numerous 2-alkoxymethyl- and 2-aryloxymethyl-4-(p-nitrophenyl)-thiazoles were obtained as result of the reaction of 2-chloromethyl-4-(p-nitrophenyl)-thiazole with alcoholates and phenolates. Reduction of the formed nitroazoles resulted in the formation of 2-alkoxymethyl- and 2-aryloxymethyl-4-(p-aminophenyl)-thiazoles. The experimental procedure is described in detail. Four references. Tables.

Institution : Acad. of Sc. Ukr-SSR, Institute of Organic Chemistry

Submitted : December 7, 1953

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

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FRIDMAN, S. G.

2-Alkoxymethyl- and 2-aryloxymethyl-5(p-aminophenyl)thiazoles. S. G. Fridman. *Zhur. Obshchei Khim.* 25, 976-[illegible] (1955); cf. [illegible] 49, [illegible], 12446f.—Treatment of 85.7 g. $BzCH_2NH_2.HCl$ in 400 ml. $CHCl_3$ with 61.3 g. [illegible] in the presence of 79 g. pyridine at below [illegible] $BzCH_2NHCOCH_2OEt$ (I), m. 44°. Similarly [illegible] $p\text{-}O_2NC_6H_4COCH_2NHCOCH_2OEt$, m. [illegible] $NHCOCH_2OBu$, b_2 208°; 63% $BzCH_2NH$ [illegible] 98.8°; 41% $BzCH_2NHCOCH_2OCH_2Ph$ [illegible] 40% $p\text{-}O_2NC_6H_4COCH_2NHCOCH_2OCH_2Ph$ [illegible] $BzCH_2NHCOCH_2OC_6H_4Cl\text{-}p$, m. [illegible] $COCH_2OC_6H_4OMe\text{-}o$, m. 96.7°. Refluxing [illegible] 48 g. P_2S_5 in 150 ml. dry pyridine [illegible] *ethoxymethyl-5-phenylthiazole* (Ia), b_3 153-[illegible]. Similarly [illegible] prepd. the following *2-alkoxymethyl-5-phenylthiazole* [illegible] shown): *Bu* (Ib), 50%, b_4 160-2°; *Ph* (Ic), 50% [illegible] $o\text{-}MeOC_6H_4$, 45%, m. 90°. Heating Ia or Ib with 75% [illegible] 0.5 hr. at 140-5° gave 70% *2-hydroxymethyl-5-phenylthiazole* (II), b_{12} 205-8°; similar treatment of Ic gave [illegible] appeared to be a *sulfonation product*, not melting below [illegible] II with $SOCl_2$ in $CHCl_3$ gave *2-chloromethyl-5-phenylthiazole HCl* (III), m. 140°; the *free base* is an undistillable [illegible] These substances are skin irritants. Nitration of III with mixed acid at 0-2° gave 75% *2-chloromethyl-5-(p-nitrophenyl)thiazole* (IV), m. 103°. Similarly Ia gave *2-ethoxymethyl-5-(p-nitrophenyl)thiazole*, m. 65°, and Ib gave [illegible] *butoxymethyl-5-(p-nitrophenyl)thiazole*, undistillable [illegible] Refluxing IV with PhOH in Me_2CO in presence of K_2CO_3 [illegible] hrs. gave 60% *2-phenoxymethyl-5-(p-nitrophenyl)thiazole*, m. 153-4°; similarly was prepd. 64% *p-ClC₆H₄* [illegible] 158°. Reduction of the O_2N derivs. with Fe in [illegible] AcOH gave the following ethers of *2-hydroxymethyl-5-(p-aminophenyl)thiazole* (ethereal substituent, % yield, m.p. and m.p. of the mono-HCl salt and N-Ac deriv. given): *Ph*, 70, 114-15°, 216-17°, 180°; *p-ClC₆H₄*, 65, [illegible] 200-1°, 214°; *Et*, [illegible], 129°; *Bu*, [illegible] 140°.

G. M. [illegible]

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.G.; KIPRIANOV, A.I.

Cyanine dyes from the isomeric pyridothiazoles. Ukr.khim.zhur. 22 no.6:767-771 '56. (MLRA 10:7)

1. Institut organicheskoy khimii AN USSR.
(Cyanine dyes)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S. G.

Derivatives of pyrido[3,4-d]thiazole. S. G. Fridman. *Zhur. Obshchei Khim.* 26, 613-17(1956).—Refluxing 0.4 g. S with 48 g. $Na_2S.9H_2O$ in 100 ml. EtOH 10 min., cooling, and gradually adding 39 g. 3-nitro-4-chloropyridine gave after 10 min. at 70-80° and treatment with H_2O, 62% *3,3'-dinitro-4,4'-dipyridyl disulfide*, m. 216° (from AcOH). This (19.6 g.) and 60 g. Zn dust added in 1.5 hrs. to 150 g. boiling AcOH gave after 1 hr. refluxing, addn. of 40 ml. Ac_2O and refluxing 3 hrs. longer, cooling, addn. of excess 40% NaOH and extn. with $CHCl_3$, 67% *2-methylpyrido-[3,4-d]thiazole*, m. 90° (from ligroine); *picrate*, m. 208°; *HCl salt*, m. 238° (from EtOH-Et_2O). This with aq. $KMnO_4$ gave 36% *pyrido[3,4-d]thiazole-2-carboxylic acid*, decomp. 156°, which treated with $SOCl_2$, then with MeOH, gave 56% *Me ester*, m. 171°, also formed from the acid and CH_2N_2. The ester and NH_4OH gave 71% corresponding *amide*, m. 262°, while the ester and MeOH soln. of N_2H_4.-H_2O gave 83% corresponding *hydrazide*, m. 232°, provided the reaction is run at room temp.; at elevated temp. the thiazole ring is cleaved. Treatment of the *hydrazide* with BzH in hot AcOH gave the corresponding *benzylidene deriv.*, m. 241°, $C_{14}H_{10}ON_4S$. Salicylaldehyde gave the *o-hydroxybenzylidene deriv.*, m. 290°. The free acid heated to 175-80° yielded 53% *pyrido[3,4-d]thiazole*, m. 105° (from Et_2O).

G. M. Kosolapoff

Inst Organic Chem AS UK SSR

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Fridman, S.G.

Derivatives of pyrido-2' : 3'-5 : 4'-thiazole

[illegible]

[illegible]

[illegible] hydrate the hydrazide [illegible]

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

Friedman, S. G.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

Fridman, S. G.

Distr: 4E4j/4E2c(j)

Nitration of 2-methyl-5-aminopyrido[2,3-d]thiazol. G. Fridman. *Zhur. Obshchei Khim.* 27, [illegible] thiazing 30 g. 2,5-diaminopyrido[2,3-d]thiazole [illegible] 150 ml. 10% NaOH 3 hrs. [illegible] AcOH, refluxing 1 hr. with [illegible] ml. [illegible] refluxing the residue with [illegible] nerve, treating the residue with [illegible] $CHCl_3$ gave 12% *2-methyl-5-acetamidopyrido[2,3-d]thiazole* (I), m. 247° (cf. Ueda, *et al.*, C.A. 48, [illegible]) [illegible] heated 1 hr. with concd. HCl, made alk. with [illegible] [illegible] $CHCl_3$, and purified [illegible] [illegible] *amino-analog* II [illegible] [illegible] g. [illegible] ml. concd. H_2SO_4 [illegible] HNO_3 [illegible] and the mixt. [illegible] [illegible] and neutralized with NH_4OH [illegible] same reaction at 25 8° in 1 hr. [illegible] with EtOH and crystd. from [illegible] above 270°, while the alc. ext. gave *2-methyl-5-nitrosopyrido[2,3-d]thiazole*, m. 216° (insol. in [illegible]) *methyl-5-nitramidopyrido[2,3-d]thiazole*, decomp. [illegible] in alkali. Thus, I cannot be nitrated with HNO_3 [illegible] (5.5 g.) in 50 ml. concd. H_2SO_4 treated with 7.5 ml. HNO_3 [illegible] (d. 1.5), and the mixt. quenched as above after [illegible] yielded 5.9 g. yellow needles, decomp. [illegible] parently of *2-methyl-5-nitraminopyrido[2,3-d]thiazole* [illegible] heated with concd. H_2SO_4 1 hr. at 50° and kept [illegible] room temp. gave *2-methyl-5-amino-6-nitropyrido[2,3-d]thiazole*, orange needles, m. 216°. G. M. Kosolapoff

Inst. Org. Chem. [illegible]

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

Fridman, S.G.

Distr: 4E4j

Derivatives of pyrido[2,3-d]thiazole. S. G. Fridman. Zhur. Obshchei Khim. 27, 973-7(1957); cf. C.A. 50, 13066k.

--To 6.4 g. 2-methyl-5-aminopyrido[2,3-d]thiazole (1) in 75 ml. EtOH was slowly added 10 ml. concd. H_2SO_4 followed by addn. at 10° of 4.1 g. $NaNO_2$ in 7.5 ml. H_2O; after stirring 1 hr. and slow heating to reflux 15 min. the mixt. was filtered, the filtrate concd., with NaOH, and extd. with $CHCl_3$ yielding 4 g. 2-methyl-5-ethoxypyrido[2,3-d]thiazole, m. 71° (ligroine). To 30 ml. concd. H_2SO_4 was slowly added 2 g. $NaNO_2$ followed by addn. at −10° of 1.65 g. I in 10 ml. H_2SO_4 followed by 5.3 g. $Na_2S_2O_4$ in 25 ml. concd. H_2SO_4, the mixt. was kept 20 hrs. at 0°, quenched in ice, and extd. with $CHCl_3$ yielding 1.2 g. 2-methyl-5-hydroxypyrido[2,3-d]thiazole, m. 213° (EtOH). To 2 g. I in 10 ml. concd. HCl and 5 ml. H_2O was added at 0° 1.3 g. $NaNO_2$ in 4 ml. H_2O; after stirring 0.5 hr. and heating to reflux, the mixt. was neutralized and extd. with $CHCl_3$; the ext. was passed over Al_2O_3 and the column eluted with $CHCl_3$ yielding 1.6 g. 2-methyl-5-chloropyrido[2,3-d]thiazole, m. 169-70° (ligroine). To 10 ml. concd. HCl and 20 ml. H_2O was added 0.7 g. 2-methyl-5-amino-6-nitropyrido[2,3-d]thiazole, the mixt. warmed to soln., and treated with 10 ml. concd. HCl at −10° this was treated with 0.25 g. $NaNO_2$ in 2 ml. H_2O followed by 1.8 g. $Na_2S_2O_4$ in 5 ml. H_2O. After 1 hr. at −5 to 0° and 20 hrs. at 0° the mixt. was filtered and the solid washed with H_2O and NaOH yielding 0.58 g. yellow 2-methyl-5-hydroxy-6-nitropyrido[2,3-d]thiazole, m. 288° (AcOH).

G. M. Kosolapoff

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

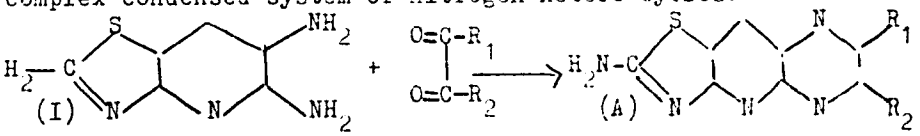
"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

AUTHOR: Fridman, S.G. SOV/79-28-11-39/55

TITLE: Triaminopyridothiazole and Its Condensation Products With Dicarbonyl Compounds (Triaminopiridotiazol i yego produkty kondensatsii s dikarbonil'nymi soyedineniyami)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 11, pp 3078-3083 (USSR)

ABSTRACT: The scope of the present paper was the synthesis of the hitherto unknown 2,5,6-triaminopyrido [2,3-d] thiazole (I) and its condensation with dicarbonyl compounds, as well as to find out the physiological activity of the reaction products formed therefrom. The condensation products of this triamine with the dicarbonyl compounds pyrazino-[5,6-b] pyrido [2,3-d] thiazolines (A) consist of a complex condensed system of nitrogen hetero cycles:



Concerning their structure they are close to the pteridines. Compound (I) was obtained from 2,6-diamino-3-nitropyridine and the thiazole (II) by thiocyanation (Scheme 2). By reduction (II) was

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SOV/79-28-11-39/55

Triaminopyridothiazole and Its Condensation Products With Dicarbonyl Compounds

transformed into (I) in good yield, which was identified in the form of the dichlorine hydrate, sulfate. To prove the presence of two amino groups in the ortho position products of the condensation of the base (I) with the quinones (X) and (XI) were synthesized. The condensation with symmetrical dicarbonyl compounds leads to derivatives of the 2-aminopyrazino-[5,6-b] pyrido [2,3-d]-thiazole ($A, R_1=R_2$), the condensation with unsymmetrical ones to the formation of two isomers. The condensation of the phenyl glyoxal, for instance, is illustrated by scheme 4. It may be concluded therefrom that in the condensation with pyrotartaric acid mainly a pyrazinopyridothiazole (G) must be obtained. The synthesized derivatives of the 2-amino pyrazine [5,6-b]-pyrido —[2,3-d] thiazole are given in the table. They are stable compounds and cannot be characterized by melting points so that in the table only the maxima and minima of the absorption curves of their alcohol solutions in the ultraviolet could be given.- There are 1 table and 8 references, 5 of which are Soviet.

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

Triaminopyridothiazole and Its Condensation Products With Dicarbonyl Compounds SOV/79-28-11-39/55

ASSOCIATION: Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR (Institute of Organic Chemistry of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: July 15, 1957

Card 3/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

AUTHOR: Fridman, S. G. SOV/79-29-1-33/74

TITLE: Condensation of Triaminopyrido [2,3-d] Thiazole With Carboxylic Acids (Kondensatsiya triaminopirido [2,3,-d] tiazola s karbonovymi kislotami)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 1, pp 153-156 (USSR)

ABSTRACT: The objective of this paper was the condensation of 2,5,6-triaminopyrido [2,3-d] thiazole with carboxylic acids. The condensation of the ortho-diamino derivatives of the aromatic and heterocyclic series with carboxylic acids leads to the formation of compounds which contain the imidazole cycle. It is known that the amino group of pyridine in position 3 reacts more readily than that in position 2; as a consequence, it may be expected that on the condensation of 2,5,6-triaminopyrido [2,3-d] thiazole (A) with carboxylic acid derivatives of the imidazo [5,6-d] pyrido [2,3-d] thiazole of the structural formula (B) are formed. At present, the condensed heterocyclic systems with pyrazine and imidazole rings attract the attention of chemists. The imidazo-pyrido thiazoles mentioned have hitherto been unknown. By heating 2,5,6-triaminopyrido [2,3-d] thiazole with carboxylic acids of the aliphatic series in

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

Condensation of Triaminopyrido [2,3-d] Thiazole With Carboxylic Acids

SOV/79-29-1-33/74

15 % hydrochloric acid solution for 2-3 hours it was possible to obtain the corresponding alkyl derivatives of the imidazo [5,6-d] pyrido [2,3-d] thiazole. The benzoic, mandelic, and phenylacetic acid did not react under these conditions. The derivatives of imidazo [5,6-d] pyrido [2,3-d] thiazole obtained are listed in the table which gives yields, analyses, maxima and minima of the absorption curves in ultraviolet. On melting 2,5,6-triaminopyrido [2,3-d] thiazole with urea the 2-amino-6-oxy-imidazo [5,6-d] pyrido [2,3-d] thiazole (VIII) was formed (Table). The heating of triaminopyrido thiazole with carbon disulfide brought about the formation of the 2-amino-6-mercapto-imidazo [5,6-d] pyrido [2,3-d] thiazole (IX)(Table). The derivatives of imidazopyridothiazole are crystalline compounds, possess high melting points and are readily soluble in water. Their elementary analysis, except the sulfur analysis according to Carius, is complicated. On standing their solutions darken and separate dark-colored precipitates. There are 1 table and 6 references, 2 of which are Soviet.

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Condensation of Triaminopyrido [2,3-d] Thiazole With Carboxylic Acids SOV/79-29-1-33/74

ASSOCIATION: Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR (Institute of Organic Chemistry of the Academy of Sciences, Ukr SSR)

SUBMITTED: November 18, 1957

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

S/079/60/030/05/25/074
B005/B126

AUTHOR: Fridman, S. G.

TITLE: The Condensation of o-Diamino Derivatives of 2-Methylbenzothiazole With Carboxylic Acids. II. Thiazolo Benzimidazole

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 5, pp. 1520-1526

TEXT: The author describes the condensation of isomeric o-diamino derivatives of 2-methylbenzothiazole with carboxylic acids. By this condensation all theoretically possible isomers of thiazolobenzoimidazole with a common carbon-carbon bond were synthesized. These compounds were previously unknown. By condensation of 2-methyl-6,7-diaminobenzothiazole with carboxylic acid, derivatives of angular thiazolo(4,5-g)benzoimidazole (I) are formed; by condensation of 2-methyl-4,5-diaminobenzothiazole with carboxylic acid, derivatives of angular thiazolo(5,4-g)benzoimidazole (II) are formed; and finally, by condensation of 2-methyl-5,6-diaminobenzothiazole with carboxylic acids, derivatives of linear thiazolo (4,5-f)benzoimidazole (III) are formed. The schemes of these three types of reactions are given. Each of the three above isomeric heterocyclic

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

The Condensation of o-Diamino Derivatives of 2-Methylbenzothiazole With Carboxylic Acids. II. Thiazolo Benzimidazole

S/079/60/030/05/25/074
B005/B126

initial products was condensed with the following carboxylic acids: formic acid, acetic acid, propionic acid, glycolic acid, lactic acid, benzoic acid, phenylacetic acid, and succinic acid; apart from these the condensation was also carried out with urea and carbon disulfide. In Table 1 all the synthesized thiazolobenzoimidazoles are compiled (10 derivatives each of types (I), (II), and (III)). All these compounds form colorless crystals which melt above 100°. The majority of them are easily soluble in hot water and alcohol; the 2-alkyl-substituted derivatives are also soluble in benzene and ether. All thiazolobenzoimidazoles are easily soluble in diluted hydrochloric acid and easily form dihydrochlorides and picrates. The compounds of the type (III) are more easily soluble in water and organic solvents than the isomeric derivatives of the types (I) and (II). The above table gives the acid radical of the initial product, the production yield, melting point, gross formula, and percentage content of heteroelements (N, S) for each compound synthesized. The reaction conditions on the condensation differed according to the acid used as initial product. Table 2 gives the ultraviolet absorption maxima for the three isomeric derivatives which are not

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

The Condensation of o-Diamino Derivatives of 2-Methylbenzothiazole With Carboxylic Acids. II. Thiazolo Benzimidazole

S/079/60/030/05/25/074
B005/B126

substituted on the imidazole ring. These derivatives are formed by condensation of isomeric 2-methyl-o-diaminobenzothiazole with formic acid. A diagram shows the absorption curves of these three derivatives in alcoholic solution. The reaction conditions on the production of the 30 thiazolobenzoimidazoles are fully described in the experimental part. There are 1 figure, 2 tables, and 3 references: 1 Soviet, 1 British, and 1 German.

ASSOCIATION: Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR (Institute for Organic Chemistry of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: May 11, 1959

Card 3/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.G.

Condensation of o-diamino derivatives of 2-methylbenzothiazole with α-dicarbonyl compounds. Part 1: Thiazoloquinoxalines. Zhur. ob.khim. 30 no.5:1685-1693 My '60. (MIRA 13:5)

1. Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR.
(Benzothiazole) (Quinoxaline)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.G.

Synthesis of folic acid analogs. Zhur.prikl.khim. 33 no.7: 356-363 Jl '60. (MIRA 13:7)

1. Institut organicheskoy khimii AN USSR.
(Glutamic acid)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.G.

Thiazolobenzothiadiazoles and thiazolobensoselenadiazoles and dyes based on them. Zhur. ob. khim. 31 no.4:1096-1106 Ap '61. (MIRA 14:4)

1. Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR.
(Benzothiadiazole) (Benzoselenadiazole)
(Dyes and dyeing)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.G.; GOLUB', D.K.

2-methyloxazolo-(5, 4-g)-benzothiazole and dyes prepared from it. Zhur.ob.khim. 31 no.10:3394-3400 O '61. (MIRA 14:10)

1. Institut organicheskoy khimii Akademii nauk Ukrainskoy SSR.
(Benzothiazole) (Oxazole) (Dyes and dyeing)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.G.

Dyes with thiazolobenzimidazole and thiazolobenzotriazole rings. Zhur.ob.khim. 32 no.5:1461-1467 My '62. (MIRA 15:5)

1. Institut organicheskoy khimii AN Ukrainskoy SSR.
(Cyanine dyes) (Benzotriazole) (Benzimidazole)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.G.; KOTOVA, L.I.

Derivatives of imidazobenzothiadiazole, imidazobenzoselenodiazole, imidazobenzotriazole, and imidazoquinoxaline. Zhur.ob.khim. 32 no.9:2871-2882 S '62. (MIRA 15:9)

1. Institut organicheskoy khimii AN Ukrainskoy SSR.
(Benzothiazole) (Benzothiadiazole) (Quinoxaline)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

S/079/63/033/001/012/023
D205/D307

AUTHOR: Fridman, S. G.

TITLE: Thiazolodihydrobenzoboradiazoles

PERIODICAL: Zhurnal obshchey khimii, v. 33, no. 1, 1963, 207-213

TEXT: The condensations of 2-methyl-6,7-diaminobenzothiazole, 2-methyl-4,5-diaminobenzothiazole, and 2-methyl-5,6-diaminobenzothiazole with phenylboronic acid, by boiling in toluene solutions for four hours and removing the water formed as an azeotrope, resulted in the formation of respectively 2-methyl-7-phenylthiazolo-(5,4-e)-6,8-dihydrobenzo-2',1',3'-boradiazole (I), 2-methyl-5-phenylthiazolo(-4,5-e)-4,6-dihydrobenzo-2',1',3'-boradiazole (II), and 2-methyl-6-phenylthiazolo(4,5-f)-5,7-dihydrobenzo-2',1',3'-boradiazole (III), in 85, 82 and 62% yields. The structures were confirmed by the methods of synthesis, analysis, and acid hydrolysis. The uv absorption spectra of alcoholic solutions of I - III were similar to those of corresponding 2-methylphenylbenzimidazoles, but differed from the starting o-diamino derivatives of 2-me-

Card 1/2

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Thiatolodihydrobenzoboradiazoles

S/079/63/033/001/012/023
D205/D307

thylbenzothiazoles. Treatment of I and II with ethyl iodide, diethyl sulfate or ethyl p-toluene sulfonate gave crystalline compounds containing boron, which lost B on washing in alcohol, giving the o-diamino derivatives of the quaternary salts of the corresponding 2-methylbenzothiazoles. Symmetric and asymmetric trimethynecyanine dyes were then prepared by heating respectively (a) the quaternary iodoethylates with ethyl orthoformate in pyridine, and (b) the tosylates derived from I and II with the iodoethylate of 2-ω-acetanilidovinylbenzothiazole, in $(CH_5CO)_2O$, in the presence of triethylamine. The yields of the 4 dyes ranged from 43 to 63%. There are 3 figures and 1 table.

SUBMITTED: February 5, 1962

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.G.; GOLUB', D.K.

2-Methylthiazolo[4,5-e]benzoxazole and 2-methylthiazolo[5,4-f]benzoxazole. Zhur.ob.khim. 34 no.1:280-284 Ja '64. (MIRA 17:3)

1. Institut organicheskoy khimii AN UkrSSR.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.G.

Reactivity of methyl groups in some tricyclic nitrogen heterocycles. Zhur. ob. khim. 35 no.8:1364-1368 Ag '65. (MIRA 18:8)

1. Institut organicheskoy khimii AN UkrSSR.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

N/5
611.91
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Fridman, Sand'ye Lazarevich

Organizatsiya khozyaystvennogo rascheta na stroitel'stve ekektrostantsiy /Cost-accounting organization in the construction of electric power stations/ Moskva, Gosenergoizdat, 1955.

190 p. tables.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.L., inzh.-ekonomist

Lowering production costs of precast reinforced concrete. Energ. stroi. no.2:3-7 '59 (MIRA 13:3)

1. Planovoye upravleniye Ministerstva stroitel'stva elektrostantsiy. (Precast concrete)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S. L.

Cand Tech Sci - (diss) " Interaction of trawl and ship in lifting catch on the stern of the trawler." /Kaliningrad/, 1961. 16 pp; (Kaliningrad Technical Inst of the Fish Industry and Economy); 160 copies; price not given; list of author's works at end of text (12 entries); (KL, 6-61 sup, 227)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S. L.

Cand Tech Sci - (diss) "Problem of use of current supply lines to submersed electric motors for telemeasurements in wells." Baku, 1961. 17 pp with diagrams; (Ministry of Higher and Secondary Specialist Education USSR, Azerbaydzhan Inst of Petroleum and Chemistry imeni M. Azizbekov); 250 copies; free; (KL, 6-61 sup, 227)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, Saad'ya Lazarevich; SINEL'NIKOVA, L.N., red.; BORUNOV, N.I., tekhn. red.

[Cost problems in power engineering]Voprosy sebestoimosti v energeticheskom stroitel'stve. Moskva, Gosenergoizdat, 1962. 271 p. (MIRA 15:12)

(Power engineering--Costs)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

9.3230 (also 1139, 1159)

32956
S/106/62/000/001/007/009
A055/A101

AUTHOR: Fridman, S. L.

TITLE: Method for determining the highest order of the differential equation of a linear electric circuit

PERIODICAL: Elektrosvyaz', no.1, 1962, 50-54

TEXT: The author suggests a simple method for determining the highest order of the differential equation describing linear electric circuits of any structure and containing elements of any type. This method takes into account all the frequencies of the natural oscillations of the system, including the zero natural frequencies. The determination is effected by a direct analysis of the circuit, without any previous recourse to its characteristic determinant. The method is based on the replacement of the initial circuit by a simpler one, having the same number of natural frequencies at a minimum number of reactance elements. Any electric circuit can be considered as a two-terminal network with either short-circuited or open terminals. In the first case, its characteristic equation can be written as:

$$z(p) = 0 \qquad (1)$$

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

32956
S/106/62/000/001/007/009
A055/A101

Method for determining the highest order ...

where z (p) is the impedance of the two-terminal network and $p = \delta + i\omega$. In the second case, the characteristic equation is: $y(p) = 0$ (2), where y (p) is the admittance of the two-terminal network. The two-terminal networks can, in their turn, be replaced by their canonical circuits. The author reproduces the canonical circuits of the RL, RC, LC and RLC types, and states that the introduction into the network of inductive couplings between coils does not change the order of the network. Therefore, the order of a network consisting of elements of all types can be evaluated on the basis of the order of y (p) of the open circuit of Fig. 6b. The order of $z(p) = 0$ of the circuit of Fig. 6a is equal to the order of y (p) of the circuit of Fig. 6b. The determination of the order of the initial network can thus be reduced to the determination of the order of the corresponding two-terminal network's canonical circuit. After stating the five fundamental assumptions underlying his method (these assumptions ensue from the two-terminal networks theory), the author gives the formula used by him for determining the highest order of the electric circuits. This formula is

$$N = An_k - Am - (A - 1)(m_{LB} + m_{CB}) + K_1 \qquad (3)$$

where A is the number of the reactance types in the circuit (1 or 2), n_k is the number of geometrically independent circuits, m is the number of independent

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

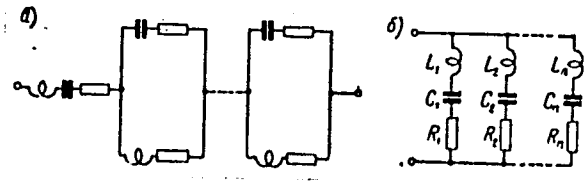
32956

Method for determining the highest order ... S/106/62/000/001/007/009
A055/A101

circuits consisting of homogeneous elements, m_{LR} and m_{CR} are, respectively, the number of independent circuits of the LR or CR type counted up in the RLC-type networks after the opening of the circuits consisting of homogeneous elements (only R, only L or only C). The k_i-value can be equal either to 1 or zero. At the end of the article, four practical examples of the application of the author's method are given. The Soviet personalities mentioned in the article are: Veber, A. A. Kharkevich, E. V. Zelyakh, A. V. Netushilov and S. V. Strakhov. There are 10 figures, 4 Soviet-bloc and 3 non-Soviet-bloc references.

SUBMITTED: July 4, 1961

Fig. 6:



Card 3/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

SADOVSKIY, Akim Samoylovich. Prinimal uchastiye SOLOGUB, S.V.; FRIDMAN, S.L.; KUL'BATSKIY, K.Ye., otv. red.; [illegible]OV, L.V., red.; VOLODARSKAYA, V.Ye., red.

[Textbook on the theory of electrical communication] Zadachnik po teorii elektricheskoi sviazi. Izd.2., perer. Moskva, Sviaz'izdat, 1963. 345 p.

(MIRA 17:7)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

L 07103-67 EWT(m)/EWP(t)/ETI IJP(c) JD/HW

ACC NR: AP6029117 SOURCE CODE: UR/0048/66/030/006/0994/0997

48
47
B

AUTHOR: Turchinskaya, M.I.; Fridman, S.L.

ORG: Institute of Metal Physics, Academy of Sciences, SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: Dependence of the unidirectional anisotropy on the degree of atomic order in a nickel-manganese alloy [Report, All-Union Conference on the Physics of Ferro- and Antiferromagnetism held 2-7 July 1965 in Sverdlovsk]

III

SOURCE: AN SSSR, Izvestiya. Seriya fizicheskaya, v. 30, no. 6, 1966, 994-997

TOPIC TAGS: ferromagnetism, antiferromagnetism, magnetic anisotropy, unidirectional magnetic anisotropy, ordered alloy, nickel alloy, manganese alloy

ABSTRACT: The authors have investigated the dependence on the degree of long range order of the low temperature anomalous magnetic properties (in particular, of the unidirectional magnetic anisotropy) of Ni_3Mn alloys. The specimens were 10 cm long 1 mm diameter wires with 7 different degrees S of long range order from 0 to 1. The long range order was achieved by quenching the specimens in water from 900° C and then subjecting them to the heat treatments described by N.V.Volkenshteyn and G.V.Fedorov (Fiz.metallov i metallovedeniye, 9, 187 (1960)), and the degree of order was determined by neutron diffraction and from the order dependence of the saturation

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

1. FRIDMAN, S. M., Eng.

2. USSR (600)

4. Sorbents

7. Sorbents for oil regeneration by means of thermosiphons and adsorbents, Elsk. sta., 23, No. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.M.

PHASE I BOOK EXPLOITATION 577

Ivanov, V.S., and Fridman, S.M.

Masla i konsistentnyye smazki (Oils and Heavy Lubricants) Moscow, Gosenergoizdat, 1957. 248 p. 10,000 copies printed (Series [title of set]: Spravochnik khimika-energetika, t. 3)

Ed.: Gurvich, S.M.; Tech. Ed.: Fridkin, A.M.; Eds. (of set): Golubtsov, V.A.; Gurvich, S.M.; Kostrikin, Yu. M. and Mamet, A.P.

PURPOSE: This manual prepared for the use of chemists and power engineers. It may also be used by workers in laboratories, scientific research institutes, and designing and planning organizations, and by students at vuzes and tekhnikums.

COVERAGE: The authors present a detailed study of the physical and chemical characteristics and properties of oils and greases. They also cover in detail the purpose of lubricants, their specifications as required for use at electric power stations, and methods for assuring that these specifications are observed. Seventeen authors contributed to the compilation of this manual. The bibliography contains 86 references, all of which are Soviet.

Card 1/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

2-4. The substitution and blending of lubricants; winter lubricants 58

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3-1. Treatment of power-plant lube oils 61
3-2. Regeneration of power-plant lube oils 70
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3-7. Additives for oils 99
3-8. Cleaning of oil systems 105

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

V Ivanov, U. S., and Fridman, S. M.: Spravochnik khimika energetika (The Chemists Handbook—Energetics). Moscow-Leningrad: Gosenergoizdat. 1957. 257 pp. r. 10, k. 50.

2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.M.

Experimental study of the therapeutic effectiveness in guinea pigs of Uvarov's and antiendoantigenic antibrucellar serum. Zhur.mikrobiol. epid. i immun.,supplement for 1956:34-35 '57 (MIRA 11:3)

1. Iz Odesskogo instituta epidemiologii i mikrobiologii.
(SERUM THERAPY) (BRUCELLOSIS)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.Ya. [deceased]

Gas exchange in white rats during muscular exercise under conditions of a maximum load. Opyt izuch. reg. fiziol. funk. 6: 28-31 '63 (MIRA 17:3)

1. Laboratoriya obshchey fiziologii sporta Leningradskogo nauchno-issledovatel'skogo instituta fizicheskoy kul'tury i laboratoriya ekologicheskoy fiziologii (zav. - prof. A.D. Slonim) Instituta fiziologii imeni Pavlova AN SSSR.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.Ya., kandidat meditsinskikh nauk

Perilimbal novocaine block in the treatment of keratitis.
Vest. oft. 33 no.5:25-30 S-O '54. (MLRA 7:10)

1. Iz kafedry glaznykh bolezney (zav. prof. M.L.Krasnov) TSentral'-
nogo instituta usovershenstvovaniya vrachey.
(ANESTHESIA, REGIONAL,
perilimbal procaine block in keratitis)
(PROCAINE, therapeutic use,
keratitis, perilimbal block)
(KERATITIS, therapy,
procaine perilimbal block)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S. Ya.

Optochiasmatic arachnitis in an ophthalmological clinic. Sov. med. 19 no.11:27-31 N '55 (MLRA 9:1)

1. Iz kafedry glaznykh bolezney (zav.-prof. M. L. Krasnov) Tsentral'nogo instituta usovershenstvovaniya vrachey (dir. V. P. Lebedeva)
(ARACHNOID, diseases,
arachnitis, opto-chasmatic)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.Ya., kandidat meditsinskikh nauk

"Manual on selecting glasses." N.N.Galkin. Reviewed by S.IA.Fridman. Vest.oft. 69 no.3:39-41 My-Je '56. (MLRA 9:8)
(OPTOMETRY) (GALKIN, N.N.)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

BELOSTOTSKIY, Ye.M., doktor med.nauk [deceased]; FRIDMAN, S.Ya., kand.med. nauk

Prescription of eyeglasses in concomitant strabismus. Uch.zap. GNII glaz.bol. no.7:27-33 '62. (MIRA 16:5)

1. Iz otdeleniya okhrany zreniya detey Gosudarstvennogo nauchno-issledovatel'skogo instituta glaznykh bolezney imeni Gel'mgol'tsa.
(STRABISMUS) (EYEGLASSES)

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

BELOSTOTSKIY, Ye.M., doktor med.nauk [deceased]; FRIDMAN, S.Ya., kand. med.nauk

Color instrument for the examination of binocular vision. Uch.zap. GNII glaz.bol. no.7:227-231 '62. (MIRA 16:5)

1. Iz otdeleniya okhrany zreniya detey Gosudarstvennogo nauchno-issledovatel'skogo instituta glaznykh bolezney imeni Gel'mgol'tsa.
(EYE, INSTRUMENTS AND APPARATUS FOR) (BINOCULAR VISION)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S.Ya., kand.med.nauk

Teaching activity of the Department for the Protection of Vision in Children of the Gel'mgol'tsa Institute. Uch.zap. GNII glaz.bol. no.7:289-290 '62. (MIRA 16:5)

1. Iz otdeleniya okhrany zreniya deteY Gosudarstvennogo nauchno-issledovatel'skogo instituta glaznykh bolezney imeni Gel'mgol'tsa.
(OPHTHALMOLOGY--STUDY AND TEACHING)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

BELOSTOTSKIY, Ye.M., doktor med.nauk [deceased]; AVETISOV, E.S., kand. med.nauk; FRIDMAN, S.Ya., kand.med.nauk; SMOL'YANINOVA, I.L., kand.med.nauk; KHVATOVA, A.V., kand.med.nauk

Basic problems of diagnosis and treatment of concomitant strabismus. Uch.zap. GNII glaz.bol. no.7:7-12 '62. (MIRA 16:5)

1. Iz otdeleniya okhrany zreniya detey Gosudarstvennogo nauchno-issledovatel'skogo instituta glaznykh bolezney imeni Gel'mgol'tsa.
(STRABISMUS)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

USSR/Human and Animal Physiology (Normal and Pathological). T-11
Nerve and Muscle Physiology.

Abs Jour : Ref Zhur - Biol., No 11, 1958, 51198

Author : Fridman, S.Ya.

Inst : State Scientific Research Institute of Child Orthopedics.

Title : The Characteristics of Muscle Physiology in Traumas of the Supporting and Motor Apparatuses.

Orig Pub : V sb.: 6-ya nauchn. sessiya Gos. n.-i. detsk. ortoped. in-ta, 1954, L., 1956, 306-316.

Abstract : In a unilateral amputation of an extremity, the galvanic excitability (GE) of almost all muscles which have lost their distal point of attachment is lowered, while the chronaxy (Ch) is lengthened by $1\frac{1}{2}$-$2\frac{1}{2}$ times as compared with the symmetric chronaxy of the other extremity. In bilateral amputations, a lenghtening of Ch and a lowering

Card 1/3

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

USSR / Human and Animal Physiology. Neuro-muscular Physiology. T-9

Abs Jour : Ref Zhur - Biologiya, No 1, 1959, No. 3724

Author : Uflyand, Yu. M.; Fridman, S. Ya.
Inst : AS Georgian SSR
Title : Effect of Muscle Tension on Its Functional Properties

Orig Pub : Probl. sovrem. fiziol. nervn. i myshechn. sistem. Tbilisi, AN GruzSSR, 1956, 465-474

Abstract : The increased contraction effect of a tired skeletal muscle after stretching is conditioned upon the action on the nerve endings in the muscle. Increased contraction of the cardiac muscle when the intracardiac pressure also rises, basically depends upon stimulation of the nervous elements. The isotonic character of muscular contractions in the intact animal, as well as in patients with injury to the tendon, makes the functional state of the muscle and its innervation worse.

Card 1/2

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

USSR/Human and Animal Physiology - Neuro-Muscular Physiology. V-11

Abs Jour : Ref Zhur - Biol., No 1, 1958, 4368

in principle, and closely related to the motor capacity. The weakened activity of the affected muscles was always reflected by a decreased frequency and amplitude of the muscular biocurrents produced by voluntary contractions. On the affected side, the frequency of the electric oscillations and their amplitude were markedly lower than those of the symmetrical healthy muscle. Sometimes, in cases of complete paralysis of some muscles, when their contractions were no more observable, electromyograms showed rare oscillations (10-20 per second). This proves the presence, in the paralyzed muscles, of single neuromotor units still having a normal nervous connection with the spinal cord and the brain. The authors think that the results of the experiments show that, after poliomyelitis, there are foci of long-lasting inhibition in the cellular formations of the spinal cord.

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

USSR/Human and Animal Physiology - The Nervous System. V-6

Abs Jour : Ref Zhur - Biol., No 4, 1958, 18516

surgeons in every way possible avoid keeping a muscle for a prolonged time under isotonic conditions.

Card 3/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

UFLYAND, Yu.M., prof.; GOLOVINSKAYA, N.V., starshiy nauchnyy sotrudnik; FRIDMAN, S.Ya., starshiy nauchnyy sotrudnik

Physiological studies of late results of tendon and muscle transplantation in poliomyelitis. Ortop.travm.i protez. 20 no.8:8-15 Ag '59. (MIRA 12:11)

1. Iz fiziologicheskoy laboratorii (zav. - prof. Yu.M. Uflyand) Nauchno-issledovatel'skogo detskogo ortopedicheskogo instituta im. G.I. Turnera (dir. - prof. M.N. Goncharova).
(POLIOMYELITIS, surgery)
(TENDONS, transplantation)
(MUSCLES, transplantation)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

MIRZOYEVA, I. I., starsh. nauch. sotrud.; FRIDMAN, S. Ya., starsh. nauch. sotrud.

Contractures in children in the rehabilitation period of poliomyelitis. Ortop., travm. i protez. 22 no.8:41-49 Ag '61. (MIRA 14:12)

1. Iz Gosudarstvennogo nauchno-issledovatel'skogo detskogo ortopedicheskogo instituta im. G. I. Turnera (dir. - prof. M. N. Goncharova)

(POLIOMYELITIS) (CONTRACTURE)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720009-4

FRIDMAN, S. Ya.

Coordinative correlation of the muscle antagonists of the knee joint according to electromyographic studies. Trudy LSGMI 64: 88-102 '61. (MIRA 15:7)

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(ELECTROMYOGRAPHY) (KNEE)

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(Sugar industry)

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Results of receiving beets on the basis of sugar content in 1954.
Sakh.prom.no.6:32-35 '55. (MLRA 9:1)

1.Glavsakhar

(Sugar industry)

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(Sugar industry) (Sugar beets)

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1.Glavsakhar.
(Zherdevka--Sugar industry--Equipment and supplies)

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(Sugar beets--Storage)

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Create normal operating conditions for tractor-mounted shovels (Concrete loading platforms). Sakh.prom. 30 no.7:36-37 Jl '56. (MLRA 9:11)

1. Rosglavsakhar.

(Loading and unloading)

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Obryvko beet stacker-unloader and rake-type beet loader. Sakh.prom. 30 no.7:50-54 Jl '56. (MLRA 9:11)

1. Rosglavsakhar (for Fridman and Donchak); 2. Vsesoyuznyy nauchno-issledovatel'skiy institut svekly (for Klyavir).
(Sugar industry--Equipment and supplies)

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Determining the amount of dirt and trash in sugar beets delivered to sugar plants. Sakh.prom. 30 no.9:36-37 S '56. (MLRA 10:3)

1. Rosglavsakhar.
(Sugar beets)

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The MSh-5 new mat-binding machine. Sakh.prom.30 no.11:49-51 N '56. (MLRA 10:2)

1. Rosglavsakhar.
(Textile machinery)

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Increase the sugar content of beets. Nauka i pered.op.v sel'khoz. 7 no.7:62-64 Jl '57. (MLRA 10:8)
(Sugar beets)

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Lessons of the sugar beet harvest in the R.S.F.S.R. Sakh. prom. 31 no.5:60-63 My '57. (MLRA 10:6)

1. Gosudarstvennyy institut po proyektirovaniyu novogo stroitel'-stva i rekonstruktsii predpriyatiy sakharnoy promyshlennosti.
(Sugar beets--Harvesting)

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Certain regularities in the growth of sugar beets. Sakh.prom. 31 no.9:40-42 S '57. (MIRA 10:12)

1. Gosplan RSFSR

(Sugar beets)

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Storing sugar beets in underground beet storehouses in Krasnodar Territory. Sakh.prom.31 no.9:66 S '57. (MIRA 10:12)
(Krasnodar Territory--Sugar beets--Storage)

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USSR/General Problems. Methodology. History. Scientific Institutions and Conferences. Instruction. Questions Concerning Bibliography and Scientific Documentation A

Abs Jour : Ref Zhur-Khimiya, No 3, 1958, 6825

Author : S. Ye. Fridman, I. A. Selyuk
Inst :
Title : Raw Material Base of the Sugar Industry to the 40th Anniversary of Soviet Rule

Orig Pub : Sakharnaya prom-st', 1957, 31, No 10, 10-13

Abstract : No abstract

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Condition of sugar beets. Sakh. prom. 32 no.4:60-61 Ap '58. (MIRA 11:6)

1.Gosplan RSFSR.

(Sugar beets)

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(Sugar beets) (MIRA 13:8)

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Some urgent problems of the storage, transportation, and unloading of sugar beets. Sakh.prom. 33 no.6:19-21 Je '59. (MIRA 12:8)

(Sugar beets)

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Scientific symposium on sugar beet growing. Sakh. prom. 33 no.11: 63 N '59 (MIRA 13:3)

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(Sugar beets)

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Density of sugar-beet planting in the R.S.F.S.R. Sakh.prom. no.4:72-73 Ap '60. (MIRA 13:8)
(Russia--Sugar beets)

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All-Russian Conference of Sugar-Beet Growers. Sakh.prom. 34 no.6: 18-19 Je '60. (MIRA 13:7)
(Russia--Sugar growing--Congresses)

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Latest in fertilizers, herbicides, and poisonous chemicals for sugar beets. Sakh.prom. 34 no.6:72 Je '60. (MIRA 13:7)
(Sugar beets--Fertilizers and manures)
(Herbicides)
(Pesticides)

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Prospects for the development of sugar manufacture in Siberia and in the East. Sakh.prom. 34 no.7:10-12 Jl '60. (MIRA13:7)

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Machine for making pressboard plates. Sakh.prom. 34 no.8:36 Ag '60. (MIRA 13:8)

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(Sugar industry—Equipment and supplies)

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Urgent objectives in the development and consolidation of the raw material supply for the sugar industry. Sakh. prom. 34 no. 12:1-3 D '60. (MIRA 13:12)
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Saccharinity of beets and improvement in the operation of sugar-beet-receiving terminals. Sakh.prom.35 no.3:59-61 Mr '61. (MIRA 14:3)

1. "Rosglavpishchesnabsbytsyr'ye" Vserossiyskom Sovete Narodnogo Khozyaystva.

(Sugar beets)

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