(−)-α-pinene). The NMR spectrum agrees well with published data.[2]

NBS-bromination of α-pinene. α-Pinene (6 g, $[\alpha]_D = +34°$), NBS (3 g), bis-azoisobutyronitrile (50 mg) and carbontetrachloride (18 ml) were refluxed for 16 h. The succinimide was filtered off and the solvent evaporated. Distillation *in vacuo* gave a fraction, 55−75°C/9 mm, 50 %, which, according to the GLC, contained at least six components. Four of them were separated by preparative GLC on a SE-52 column. Fraction 1, 11 %, was *p*-cymene, identified by NMR, IR, UV, and MS and by comparison with a reference sample. Fraction 2, 7 %, was probably fenchyl bromide, NMR: $\delta = 3.75$ (d), $J = 2.0$ cps, C*H*Br; $\delta = 1.88-1.25$ (m)~8 H; $\delta = 1.10$ (s) and 1.04 (s), 3 CH_3. Mw. 216/218, 1:1, calc. 217. The main fraction, 48 %, fraction 3, consisted of bornyl bromide, m.p. 76.5−78.0°C, $[\alpha]_D = +21.2°$ (lit.[7] m.p. 87−92°, $[\alpha]_D = -24.6°$, from (−)-α-pinene). NMR: $\delta = 4.25$ (m), $J = 10.5$, 5.0, and 2.5 cps, C*H*Br; $\delta = 2.7-1.0$ (m), 7H; $\delta = 0.99$ (s), 0.91 (s) and 0.87 (s), 3 CH_3. For comparison bornyl bromide was synthesized according to Wallach.[8] The fourth fraction, 27 %, was myrtenyl bromide, Mw. 214/216, 1:1, NMR: $\delta = 5.66$ (m) =CH; $\delta = 3.87$ (q), $J = 1.0$ cps, CH_2Br; $\delta = 2.7-1.9$ (m) 6 H; $\delta = 1.33$ (s) and 0.84 (s), 2 CH_3.

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Crystal Data of Some Succinylcholine Salts

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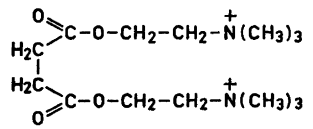
As a part of an investigation of compounds acting as neuromuscular blocking agents, the following crystallographic data have been obtained.

The unit cell parameters have been determined from precession films (Mo$K\alpha$, $\lambda = 0.7107$ Å) and the estimated uncertainties are 0.2 % for the axes and 0.2−0.3° for the angles. The crystal structures of these salts are being studied. In the following the symbol Suc-chol^{2+} is used for the succinylcholinium ion,



Succinylcholine iodide, Suc-chol^{2+}, $2I^-$. Colourless crystals from a water-ethanol solution. M.p. 250−255° (decomp.).

$a = 12.9_0$ Å, $b = 8.24_2$ Å, $c = 9.65_7$ Å, $\beta = 98.0°$.

$\varrho_{obs.}$ 1.76 g/cm^3, $\varrho_{calc.}$ 1.778 g/cm^3. $Z = 2$. Space group $P2_1$.

Succinylcholine perchlorate, Suc-chol^{2+}, $2ClO_4^-$. Colourless crystals from a 50 % ethanol solution. M.p. 267−267.5°. A pronounced tendency to twin-formation was observed.

$a = 6.53_7$ Å, $b = 13.6_6$ Å, $c = 12.6_3$ Å, $\beta = 93.0°$.

$\varrho_{obs.}$ 1.43 g/cm^3, $\varrho_{calc.}$ 1.444 g/cm^3. $Z = 2$. Space group $P2_1/c$. Molecular symmetry $\bar{1}$.

Succinylcholine picrate, Suc-chol^{2+}, $2(NO_2)_3C_6H_2O^-$. Yellow needles from a water solution. M.p. 158.5−159°.

$a = 11.0_8$ Å, $b = 7.09_7$ Å, $c = 11.2_9$ Å, $\alpha = 101.7°$, $\beta = 108.9°$, $\gamma = 94.8°$.

$\varrho_{obs.}$ 1.51 g/cm^3, $\varrho_{calc.}$ 1.528 g/cm^3. $Z = 1$. Space group $P1$ or $P\bar{1}$.

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