Total Synthesis of (±)-Dihydronorfluorocurarine and an Improved Total Synthesis of (±)-Geissoschizoline

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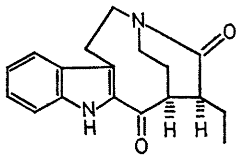
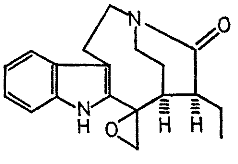
Summary A stereoselective total synthesis of (±)-dihydronorfluorocurarine in twelve stages from tryptamine is reported: one intermediate is used in an improved total synthesis of (±)-geissoschizoline.

TREATMENT of the readily available[1] tetracyclic ketolactam (I) with dimethyl sulphonium methylide[2] yielded the epoxide (II) which was smoothly rearranged to the aldehyde (III) on treatment with magnesium bromide etherate. The aldehyde function was protected by conversion into the ethylene acetal and lithium aluminium hydride reduction then yielded the base (IV). This, on catalytic aerial oxidation over platinum, gave the indolenine (V) which with cold dilute acid gave (±)-dihydronorfluorocurarine[3] (VI). Yields at all stages were good and the product and intermediates crystallised well and were fully characterised.


(I)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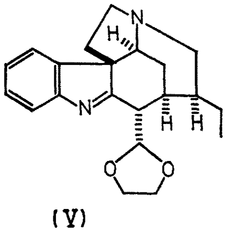
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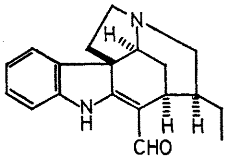
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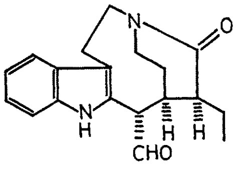
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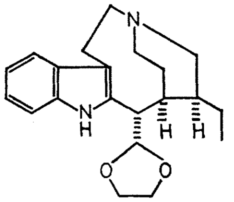
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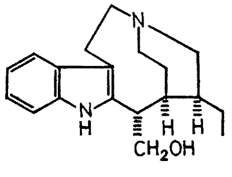
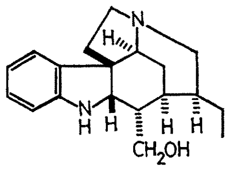

(VII)


(VIII)

Lithium aluminium hydride reduction of the aldehyde (III) gave the alcohol (VII) which on catalytic oxidation as above followed by lithium aluminium hydride reduction gave (±)-geissoschizoline (VIII). This synthesis is a considerable improvement on that reported earlier[4] from this laboratory in that it is two steps shorter and the low yield step in the earlier sequence is eliminated.

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[2] E. J. Corey and M. Chaykovsky, *J. Amer. Chem. Soc.*, 1965, **87**, 1353.
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