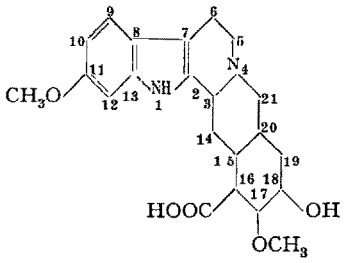

Details of our experimental work will be published elsewhere.

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Research Laboratories of Ciba Pharmaceutical Products, Inc., Summit, New Jersey, July 24, 1953.

Zusammenfassung

Bei der Permanganatoxydation und der Kalischmelze der Reserpinsäure wurden 4-Methoxy-oxalylanthranilsäure und 5-Oxyisophtalsäure isoliert. Als Arbeitshypothese wird deshalb für Reserpinsäure eine Yohimbanstruktur postuliert. Durch die obigen Abbauergebnisse ist die Stellung der einen Methoxylgruppe festgelegt, wogegen die Haftstellen der drei weiteren funktionellen Gruppen noch nicht gesichert sind.

A Note on Geissospermine

Some time ago we had the opportunity to investigate a limited amount of geissospermine. As our results do not quite agree with those reported in the literature, and as we do not anticipate a possibility to carry on this work, we report briefly our main findings. We have isolated geissospermine by the method of BERTHO and MOOG[1]. However, the amorphous product obtained this way failed to crystallize and was purified by chromatography on alumina. Geissospermine was eluted by ether-chloroform 1:1 and all the fractions crystallized easily from alcohol. After 8 crystallizations from ethyl acetate geissospermine melted at 217–219°. This compound is not a sesquihydrate as reported by BERTHO[2] (reported m.p. 210–212°) but is anhydrous. Found: C, 75·54%; H, 7·75%; N, 8·85%; N–CH_3, 1·17%; OCH_3, 4·72%; act. H, 0·17%; microhydrogenation uptake H_2, 0·78 moles. Titration in methyl-cellosolve gave one step with a pK of 7·18. Calculated for $C_{40}H_{50}O_3N_4$: C, 75·67%; H, 7·94%; N, 8·82%; N–CH_3, 2·36%; OCH_3, 4·88%. The I.R. spectrum of geissospermine has bands at 3580 and 3410 cm^{-1} belonging to OH or NH groups and in the carbonyl region a strong band at 1736 cm^{-1}. Otherwise the spectrum is too complex for assignments to be made at this stage. Cleavage of geissospermine with cold hydrochloric acid: Pure geissospermine (3·75 g) was ground with 10 ml of concentrated hydrochloric acid until no red color was produced with nitric acid as described by BERTHO[3]. The solution was poured on ice, made alkaline, and extracted with chloroform. The product (3·17 g) was purified by chromatography on alumina. The bulk of the product was eluted with 0·5% methanol in chloroform. The chromatographed base (1·04 g) was then subjected to a 50 funnel countercurrent distribution between chloroform and phosphate buffer pH 6·6. Besides smaller amounts of impurities and about 200 mg in the first funnels about 660 mg formed a homogeneous peak between the funnels 35 and 46. These were converted into a picrolonate and recrystallized to a constant m.p. of 238–240°C. Found: C, 61·64%, 61·94%; H, 6·20%, 5·99%; N, 14·66%. Calculated for $C_{19}H_{26}ON_2 \cdot C_{10}H_8O_5N_4$: C, 61·91%; H, 6·09%; N, 14·94%. The free base was liberated from the picrolonate and sublimed in high vacuum at 140° for analysis. Found: C, 76·25%; H, 8·77%; N, 9·35%; N–CH_3, 2·84%; OCH_3, 0·0%; act. H, 0·67%. Calculated for $C_{19}H_{26}ON$: C, 76·47%; H, 8·78%; N, 9·39%, N–CH_3, 5·04%. It is, therefore, clear that we have in our hands the N–CH_3 carrying moiety of geissospermine but that it does not in its pure form agree with the compound described previously by BERTHO[1]. The U.V. absorbtion of the compound is a typical dihydroindolic spectrum and it is of interest that the U.V. spectrum of geissospermine can be obtained by superimposing this spectrum on an indolic spectrum, for instance, that of cinchonamine. The I.R. spectrum of the $C_{19}H_{26}ON$ base shows a weak band at 3319 cm^{-1} and the carbonyl band at 1736 cm^{-1} is not present. Reduction of geissospermine with $LiAlH_4$ gave surprisingly a beautifully crystalline compound, m.p. 178–180°C. which was recrystallized from ethyl acetate. Found: C, 75·31%; H, 8·40%; N, 8·90%; OCH_3, 3·38%; N–CH_3, 1·68%, pK (methyl cellosolve) 8·00. Calculated for $C_{40}H_{52}N_4O_3$: C, 75·44%; H, 8·23%; N, 8·79%; OCH_3, 4·87%; N–CH_3, 2·36%. The U.V. absorbtion of the compound is similar to that of geissospermine. It is remarkable that in the I.R. spectrum of this dihydrogeissospermine the strong band at 1736 cm^{-1} remains unchanged. A strong band at 3150 cm^{-1} is much more prominent than the bands in this region in geissospermine. Another property by which dihydrogeissospermine differs strongly from geissospermine is the resistance to even warm concentrated hydrochloric acid by which geissospermine is immediately cleaved.

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Zusammenfassung

Die infraroten und ultravioletten Spektren und analytische Daten von Geissospermin wurden diskutiert. Die Spaltung von Geissospermin mit konzentrierter Salzsäure wurde wiederholt, und ein Spaltprodukt $C_{19}H_{26}ON_2$ wurde durch Gegenstromverteilung rein isoliert und durch ein kristallines Pikrolonat charakterisiert. Dieses Produkt besitzt ein Dihydroindolspektrum und trägt die N-methylgruppe des Geissospermins.

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[3] A. BERTHO and H. F. SARX, Ann. Chem. *556*, 22 (1944).

[1] A. BERTHO and H. F. SARX, Ann. Chem. *556*, 22 (1944).