

The Products of the Reactions of Isohydrocoriamyrtin and Isocoriamyrtin with Phenylhydrazine Analogues

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THE reaction of isohydrocoriamyrtin (I)¹ with excess α -methylphenylhydrazine in acetic acid yields a derivative whose analysis shows the presence of two moles of methylphenylhydrazine.² The structure of this derivative has now been shown to be (II).

The infrared spectrum which shows retention of γ -lactone by the peak at 1760 cm^{-1} , the molecular formula, $\text{C}_{29}\text{H}_{36}\text{O}_3\text{N}_4$, which contains two atoms

less of oxygen than (I), and the n.m.r. bands (in CDCl_3 , τ 6.00 (d, $J = 3$ c./sec., 11-H), 5.40 (m, 3-H), 4.12 (d, $J = 3$ c./sec., 12-H) are indicative of the substitution of either 11-OH or 6-OH by the second methylphenylhydrazine molecule, in addition to the formation of methylphenylhydrazone at C-14. This is also supported by the n.m.r. spectrum measured in perdeuteriodimethyl sulphoxide, in which disappearance of the peaks

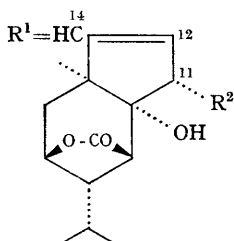
TABLE

Compound	226 m μ	Absorption (log ϵ)		
		248 m μ	305 m μ (sh.)	328 m μ
(II)	(4.23) [†]	4.27	4.30	4.49
Methylphenylhydrazine	(3.65)	4.04	(3.27)	(2.08)
(II)-Methylphenylhydrazine	(4.10)	3.88	4.25	4.49
(III)	4.12	3.89	4.24	4.43

[†] No peak is shown where the data are written in the parentheses.

at τ 4.88s and at τ 5.10 (diffused doublet), and transformation of the multiplet at τ 6.25 (11-H) into a doublet ($J = 3$ c./sec.) are observed on the addition of D₂O, and also by the comparison of the ultraviolet spectra (see Table) which indicate that the difference of the intensities of the absorption peaks between (II) and the mono-methylphenylhydrazone (III), C₂₂H₂₃O₄N₂, corresponds to one mole of methylphenylhydrazine.

The reaction of isocoriamyrtin (VI)¹ with



(I) R¹=O, R²=OH

(II) R¹=NNMePh,

R²=NH·NMePh

(III) R¹=NNMePh,

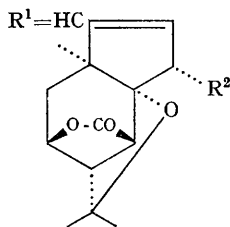
R²=OH

(VI) R¹=NNMePh,

R²=OMe

(VIII) R¹=N·NH·C₆H₃(NO₂)₂,

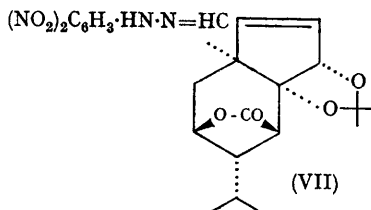
R²=OH



(IV) R¹=O, R²=OH

(V) R¹=NNPh₂,

R²=NH·NPh₂



excess $\alpha\alpha$ -diphenylhydrazine produced an analogous derivative (V), C₃₃H₃₃O₃N₄, whose structure is in accord with the following spectral data: λ_{\max} (EtOH) 246 m μ (log ϵ 4.19), 306 (4.31), and 334 (4.34); ν_{\max} (KBr) 3400 (NH) and 1772 (γ -lactone) cm.⁻¹; n.m.r., τ 6.17 (d, $J = 3$ c./sec., 11-H), 4.28 (d, $J = 3$ c./sec., 12-H), and 3.3 ~ 2.4 (m, aromatic H). The analogy of the formation of (V) to that of (II) settles the hydroxyl group in (I), substituted by the second molecule of methylphenylhydrazine, to be the allylic 11-OH.

The derivative (II) was also produced by the reaction of methylphenylhydrazine with the 11-O-methyl derivative (VI), C₂₃H₃₀O₄N₂, which was readily obtained by treating (III) with a mixture of methanol and acetic acid. Although formation of C-11 cation during the reactions is presumable, the epimers of (VI) and (II) were not detected during the reactions, (III)→(VI), and (VI)→(II), as shown by thin-layer chromatography. The nearby location of the lactone carbonyl^{1,3} might be responsible for this stereospecificity. The production of (II) from both (III) and (VI), and the spin-spin coupling constant of the n.m.r. peaks of 11-H ~ 12-H, which is uniformly shown to be $J = 3$ c./sec. in all of these products, as well as in (I) and isohydrocoriamyrtin 2,4-dinitrophenylhydrazone-acetonide (VII), in spite of the significant distortion of the cyclopentene ring, indicate α -configuration of the substituents at C-11 in these compounds.

The reaction of (I) with excess 2,4-dinitrophenylhydrazine in acetic acid yielded the mono-2,4-dinitrophenylhydrazone (VIII) only. Analogous treatment of (VIII) with methylphenylhydrazine resulted in recovery of (VIII). These results suggest that the effect of the substituent in the phenylhydrazine moiety in (III) could be one of the factors inducing the formation of (II).

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² T. Kariyone and K. Kashiwagi, *J. Pharm., Fac. Japan*, 1934, **54**, 9.

³ T. Okuda and T. Yoshida, *Tetrahedron Letters*, 1965, 4191; *Chem. and Pharm. Bull. (Japan)*, in the press.