Tetrahedron Letters No.51, pp. 6315-6316, 1966. Pergamon Press Ltd.
Printed in Great Britain.

ADDITION REACTIONS OF CYCLIC FATTY ACID EPOXIDES

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(Received 16 September 1966; in revised form 24 October 1966)

Examples of amine addition to higher fatty acid epoxides are rare (1,2), and addition to higher cyclic fatty acids is unknown. We have found that aniline, hydrazine and ammonia add to epoxides of methyl hydnocarpate and chaulmoograte forming definite crystalline products.

Hydnocarpic and chaulmoogric acids were allowed to react with etheral perphthalic acid for 24 hours. The resulting epoxides (I, m.p. 62°; II, m.p. 72°; IR*, epoxide bands at 125o, 925, 84o cm^{-1} and carbonyl at 17oo cm^{-1}) were esterified (diazomethane) and addition reactions carried out with their esters (III, m.p. 28°; IV, m.p. 32°; IR, ester carbonyl at 1725 cm^{-1}).

Reaction of IV with an excess of aniline at 22o-23o° (8 hours) under nitrogen atmosphere afforded a crystalline product melting at 12o° (methylene chloride-petroleumether). On the basis of elemental analysis, IR spectrum (NH at 325o cm^{-1}, amide bands at 165o, 1545, 1325 cm^{-1}, mono--substituted phenyl at 16oo, 1495, 144o, 758 and 69o cm^{-1}), mol. wt. determination by the Barger-Rast method (Found: 444; Calc.: 446) the product was recognized as the derivative

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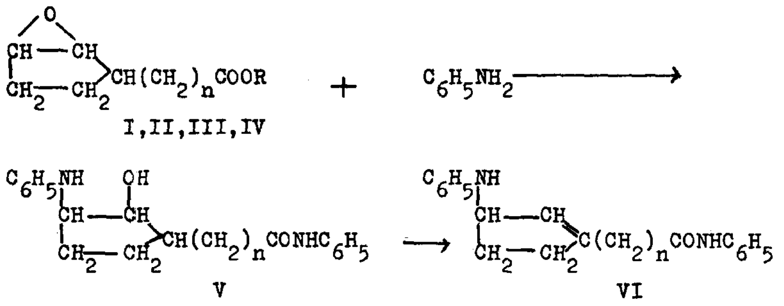
* All IR spectra were taken as KBr discs.

of higher amino acid (VI). The reaction occurred with opening of the oxirane ring, followed by the dehydration of the intermediate hydroxy amino compound (V):



n = 10 (I,III), 12 (II,IV,V,VI)

R = H (I,II), CH_3 (III,IV)

Treatment of epoxy chaulmoograte (IV) in a sealed tube for 8 hours either with anhydrous hydrazine (220-230°) or with liquid ammonia (100°), gave in good yields white crystallizable products which exhibited great tendency to polymerize. Elemental analyses, mol. wt. determinations and IR data of these new compounds could be accommodated by the formulae of a tetramer ($C_{72}H_{136}O_6N_{10}$) and a dimer ($C_{36}H_{65}O_5N$) respectively. Their structures are now under examination.

A full account of this and related work will be given at a later date.

ACKNOWLEDGEMENT. We are grateful for support of this work to the Research Fund of PR Serbia, Grant No.1005 of 9/X/1964.

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