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TERPENOIDS CXXVII

PREPARATION OF SOME INACCESSIBLE CONJUGATED α-METHYLENE γ-LACTONES*

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Many natural sesquiterpenic lactones, like costunolide[1], dehydrocostus lactone[1] etc. contain a conjugated α-methylene γ-lactone group besides isolated double bonds. When hydrogenated, the conjugated double bond of such lactones is reduced first. As a result, partially hydrogenated lactones with only the conjugated double bond intact, are not accessible.

Conjugated lactones give adducts[2] with secondary amines by Michael addition. The dimethylamine adducts of such lactones are hydrogenated to the saturated adducts, the methiodides of which give the required conjugated α-methylene γ-lactones on pyrolysis**. Thus, the dimethylamine adduct of dehydrocostus lactone (I), after hydrogenation, followed by pyrolysis of its methiodide yields the required lactone (II), which on hydrogenation gives hexahydrodehydrocostus lactone[3] (III).

By a similar procedure starting from (a) costunolide dimethylamine adduct (IV), (b) α-cyclocostunolide dimethylamine adduct (V) and (c) dehydrosaussurea lactone dimethyl amine adduct (VI), the lactones (VII), (VIII), (IX) and (X) have been prepared. Compounds (V) and (VI) have been prepared from (IV) by transannular acid catalysed cyclisation and thermal rearrangement respectively, by procedures[4], employed for similar compounds. The adduct (VI) could be partially hydrogenated to give the dihydroderivative (XI) which gives lactone (IX) by similar treatment

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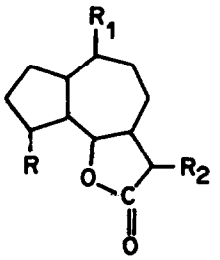
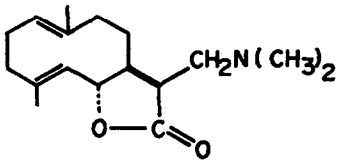
**Satisfactory analyses and spectroscopic data were obtained for all intermediates and products.



I, R, R_1, $=CH_2$; R_2, $-CH_2N(CH_3)_2$

II R, R_1, $-CH_3$; R_2, $=CH_2$

III R, R_1, R_2, $-CH_3$



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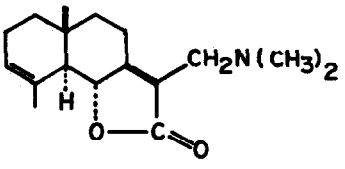

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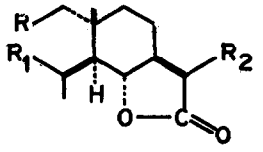
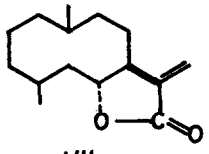


VI, R, R_1, $=CH_2$; R_2, $-CH_2N(CH_3)_2$

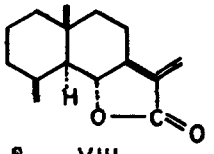
IX, R, $-CH_3$; R_1, R_2, $=CH_2$

X, R, R_1, $-CH_3$, R_2, $=CH_2$

XI, R, $-CH_3$; R_1, $=CH_2$;
R_2, $-CH_2N(CH_3)_2$



VII



VIII

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