CHEMISTRY OF 1,3-CYCLOHEXANEDIONE

COMMUNICATION 4. SYNTHESIS AND BACTERIOSTATIC ACTIVITY
OF 1,3-CYCLOHEXANEDIONE DERIVATIVES CONTAINING LONG
ALIPHATIC CHAINS

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In the preceding investigation [1] we carried out the alkylation of 1,3-cyclohexanedione (dihydroresorcinol)
with branched allyl bromides and so obtained the 2-alkyl derivatives (I), (II), (III), and (IV), the enol acetates
of which were found to have antihelminthic activity:

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\begin{align*}
(I) & \quad R = \text{CH}_3; \\
(II), (VI) & \quad R = (\text{CH}_2)_3\text{CH(CH}_3)_2 \\
(III), (VII) & \quad R = (\text{CH}_2)_7\text{CH} = \text{CH} - \text{C(CH}_3)_2 \\
(IV) & \quad (V) \\
(VI) & \quad (IX)
\end{align*}
\]

In the present communication we describe further investigations on physiologically active 1,3-cyclo-
hexanedione derivatives containing long aliphatic chains. For the synthesis of these compounds we made use
not only of C-alkylation, but also of the O-acylation of 1,3-cyclohexanedione with the acid chlorides of higher
carboxylic acids and of the hydrogenation of 4-alkylresorcinols, which are readily formed on reduction of the
products of the acylation of resorcinol with fatty acids [2]. By the alkylation of 1,3-cyclohexanedione with
1-bromo-3-methyl-2-dodecene in methanol we isolated the corresponding 2-alkyl derivative (V), which when
boiled with acetic anhydride gave the enol acetate (IX).

When undecanoyl chloride was heated with the sodium, or better the silver, derivative of 1,3-cyclo-
hexanedione in benzene, as a result of O-acylation we obtained 3-undecenoyloxy-2-cyclohexen-1-one (X),
whose structure was confirmed by its alkaline hydrolysis to undecanoic acid and 1,3-cyclohexanedione.
The hydrogenation of 4-undecylresorcinol over Raney nickel in an alkaline medium gave 4-undecyl-1,3-cyclohexanedione (XI), which was obtained in low yield also by the reduction of the dimethyl ether of 4-undecylresorcinol with lithium and liquid ammonia in presence of alcohol. In boiling acetic anhydride 4-undecyl-1,3-cyclohexanedione formed the enol acetate (XII) or (XIII), and under the action of N-bromo-succinimide it gave 2-bromo-4-undecyl-1,3-cyclohexanedione (XIV).