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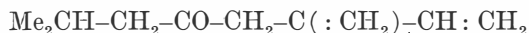
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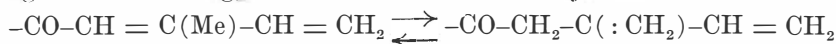
THE REDUCTION OF TAGETONE TO TAGETOL.

By T. G. H. JONES, D.Sc., A.A.C.I.

The Essential oil of *Tagetes glandulifera* was shown by Jones and Smith to contain amongst other constituents a ketone to which the name tagetone was given, and to which the constitution, that of an olefinic terpene ketone, was assigned



although later work suggested that the tautomeric system



better accorded with its properties as an $\alpha\beta$ unsaturated ketone.

In investigating the reactions of tagetone it was shown to be a readily reduced substance, but simple direct reduction to the corresponding alcohol was found to be impossible with the reagents then available.

The development during recent years of the Pondorff method of reduction using aluminium isopropoxide has, however, overcome this difficulty, and it was thought desirable to investigate the action of this reagent on tagetone. This reduction to tagetol has been found to proceed smoothly, and the properties of tagetol are described in this paper. Dehydration of tagetol to a new olefinic terpene has not, however, been effected probably owing to the instability of the desired product.

EXPERIMENTAL.

Freshly distilled tagetone (50 ccs.) was added to a solution of aluminium isopropoxide (50 grs. Al, 1 litre isopropyl alcohol) and the whole refluxed with necessary fractionation until no more acetone distilled (dinitro phenyl hydrazine test). The excess isopropyl alcohol was removed under diminished pressure and the residual mass decomposed with ice water and dilute sulphuric acid. The liberated tagetol was extracted with ether, separated and fractionally distilled. It possessed a pleasant odour and the yield amounted to 30 ccs. Combustion results confirmed the molecular composition $\text{C}_{10}\text{H}_{18}\text{O}$ (Found C = 77.8, H = 11.5 $\text{C}_{10}\text{H}_{18}\text{O}$ requires C = 77.9, H = 7.9).

The following physical constants were determined

$$d_{15.5} \quad \dots \quad = \cdot 8766$$

$$N_{20}^D \quad \dots \quad = 1.4760$$

B.P. 55° C. (3 mms.)

The acetate was readily obtained on acetylation and was a pleasant smelling liquid.

$$\text{B.P.} = 65^\circ \text{ C. (3 mms.) } d_{15.5} = \cdot 9154$$

Attempts to dehydrate tagetol by heating with potassium hydrogen sulphate or phosphorus pentoxide in light petroleum did not give the expected terpene in reasonable yield although in the case of phosphorus pentoxide treatment a small amount of liquid evidently a terpene of density $\cdot 816$ was isolated. It was not possible, however, to obtain sufficient for investigation.

Tagetol reacts readily with naphthyl and phenylisocyanates but no crystalline derivatives could be obtained.

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