Condensation of 1,2-Dimethylhydrazine with some Ketones: Formation of Δ^3-Pyrazolines and *N*-Alkylated Pyrroles

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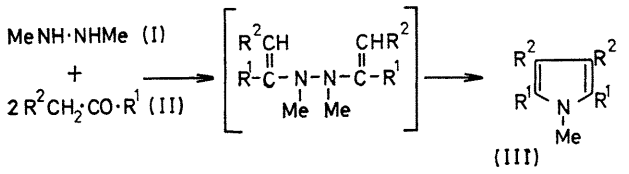
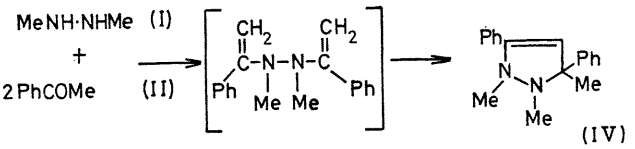
Summary The condensation of 1,2-dimethylhydrazine with some ketones gives the corresponding 1,2,3,5,5-pentasubstituted Δ^3-pyrazoline, or, in other cases, *N*-alkylated pyrroles.

A RECENT publication by Sucrow[1] has prompted us to report the results observed on the condensation of 1,2-dimethylhydrazine (I) with carbonyl compounds (II).



This reaction does not lead to a single product. Condensation with cyclohexanone gives *N*-methyloctahydrocarbazole after 4 hr. under the conditions described by Sucrow. In the same way, by an analogous mechanism, the corresponding pyrroles (III) are isolated on condensation with benzyl ethyl ketone and benzyl methyl ketone. In the latter case, the *NN*-dimethylhydrazone of benzyl methyl ketone is also formed.

However the condensation with acetophenone proceeds by a different cyclisation mechanism giving a Δ^3-pyrazoline (IV); this is in accordance with our previous results in the reactions of 1-methyl-2-phenylhydrazine with other ketones.[2]



The Table lists the ketones studied, the products of reaction, and their characteristics. The microanalytical data and n.m.r. spectra are in accordance with the structures assigned.

TABLE

Ketones	Reaction products	M.p. or b.p.	Yield %
Cyclohexanone	*N*-Methyloctahydrocarbazole	93°	40
Benzyl methyl ketone ..	1,2,5-Trimethyl-3,4-diphenylpyrrole	145—146°	30
	NN-Dimethylhydrazone of benzyl methyl ketone	67/0·15 mm.	20
Benzyl ethyl ketone ..	2,5-Diethyl-1-methyl-3,4-diphenylpyrrole	154—155°	5
Acetophenone	1,2,-Trimethyl-3,5-diphenyl-Δ^3-pyrazoline	145°/0·1 mm.	30

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[1] W. Sucrow, *Chimia* (*Switz.*), 1969, **23**, 36.
[2] J.-P. Chapelle, J. Elguero, R. Jacquier, and G. Tarrago, *Bull. Soc. chim. France*, in the press.