

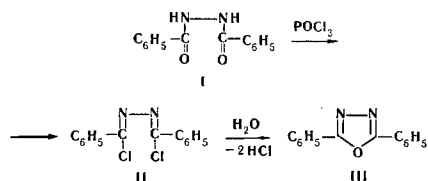
## THE CLOSURE MECHANISM OF THE 1,3,4-OXADIAZOLE RING BY MEANS OF PHOSPHORUS OXYCHLORIDE

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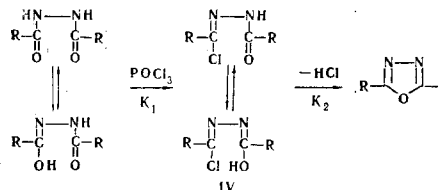
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According to an opinion widespread in the literature [1-4], it is assumed that the synthesis of 2,5-diaryl-1,3,4-oxadiazoles from N,N'-diaroylhydrazines in phosphorus oxychloride takes place via the formation as intermediates of  $\alpha, \alpha'$ -dichloroazines, for example, in accordance with the scheme:



However, we have found that this scheme does not correspond to reality. Thus, in the reaction of **I** with phosphorus oxychloride, when an attempt was made to isolate the **II** required by the scheme by replacing the aqueous treatment with freeze drying, this product was not found. On the contrary, **III** and its hydrochloride were isolated. It was also shown that **II** synthesized by a known method [5], when dissolved in phosphorus oxychloride and poured into water, is not converted into **III** but is recovered from the acid in aqueous solution practically quantitatively. Finally, 2,5-dialkyl-1,3,4-oxadiazoles are obtained in phosphorus oxychloride from N,N'-diacylhydrazines or carboxylic acids and hydrazine dihydrochloride without aqueous treatment [6]; not once have we found dichloro derivatives in the products of this reaction. All these facts show that the synthesis of **III** takes place without the stage of the formation of **II**.

The following scheme for the formation of the oxadiazoles seems more probable to us:



The  $\alpha$ -chloroacylhydrazines (**IV**) cannot be isolated, which may be due to the high rate of cyclodehydrochlorination ( $K_2 \gg K_1$ ). In an attempt to obtain **IV** by chlorinating benzaldehyde benzoylhydrazone in chloroform, cyclization took place even at room temperature.

## REFERENCES

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