ACID-CATALYTIC CLEAVAGE OF CYCLOHEXANESPIRO-2-OXAZOLIDINES

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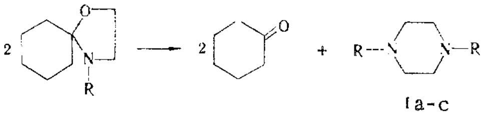
Oxazolidines have high thermal stabilities and undergo cleavage or isomerization in the presence of alkaline [1] and metal [2] catalysts, as well as peroxide initiators [3], to give amides or pyrrole derivatives. The formation of p,p'-di(3-oxazolidyl)diphenylmethane by heating 3-phenyloxazolidine in acetic anhydride has been reported [4].

We have found a new type of cleavage of the oxazolidine ring under the influence of acidic catalysts. Thus thermally stable N-substituted cyclohexanespiro-2-oxazolidines undergo cleavage to give cyclohexanone (70-80%) and 1,4-disubstituted piperazines Ia-c (38-44%) when they are heated (at 200°C for 8-10 h) with polyphosphoric acid (PPA).



Ia-c

I a R=CH$_2$CH$_2$OH; b R=CH$_2$C$_6$H$_5$; c R=C$_6$H$_5$

The physicochemical constants and the IR spectra of piperazines Ia-c and genuine preparations were identical.

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