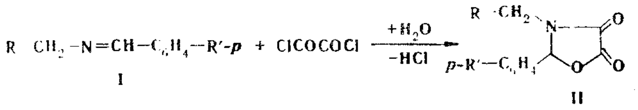
SYNTHESIS OF 3-SUBSTITUTED 2-ARYLOXAZOLIDINE-4,5-DIONES

Yu. S. Andreichikov, Yu. V. Ionov,
and I. A. Balykova

UDC 547.782.2.07

We have established that alkylidenebenzylamines Ia, b react with oxalyl chloride when the calculated amount of water is added to a solution of the reagents in dioxane to give 3-substituted 2-aryloxazolidine-4,5-diones (IIa-c):



I, II a $R=R'=H$; b $R'=H$, $R=C_6H_5$; c $R'=CH_3O$, $R=C_6H_5$

We used this method to obtain oxazolidinediones IIa [in 40% yield with mp 112-113°C (from dioxane)], IIb [in 63% yield with mp 126-127°C (from ethanol)], and IId [in 47% yield with mp 76-78°C (from ethanol)]. IR spectrum of oxazolidinedione IIa: 1805 (lactam CO) and 1740 cm^{-1} (amide CO). PMR spectrum of IIa (d_6-acetone): 2.85 (3H, s CH_3), 6.17 (1H, s, CH), and 7.33 ppm (5H, m, C_6H_5). The mass spectrum of IIa contains a molecular-ion peak [M^+ 191] and peaks of [$M - CO_2$] and [$M - CO - CO_2$] fragment ions, which confirm the presence of an oxazolidine-4,5-dione ring. The spectral characteristics of oxazolidinediones IIb, c have similar character. The results of elementary analysis of the compounds obtained for C, H, and N were in agreement with the calculated values.

The formation of IIa-c is due to partial hydrolysis of the oxalyl chloride. Since oxalyl chloride does not react with IIa-c without the addition of water to the reaction mixture, it is possible that the reaction proceeds through the intermediate formation of an oxiranedione as a result of cyclization of the primary product of hydrolysis of the oxalyl chloride, viz., oxalic acid monochloride.

Perm Pharmaceutical Institute, Perm 614000. Translated from Khimiya Geterotsiklicheskikh Soedinenii, No. 8, p. 1126, August, 1982. Original article submitted December 2, 1982; revision submitted March 22, 1982.