SOLVOLYSIS OF 8-BROMOTHEOPHYLLINE BY ACETIC ANHYDRIDE IN THE PRESENCE OF POTASSIUM FLUORIDE

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UDC 547.857.4'857.5: 542.938

According to our data, 8-bromotheophylline (I) is quite resistant to hydrolysis in acidic and alkaline media. It remains virtually unchanged when it is refluxed for 2 h in excess concentrated HCl, acetic acid, acetic anhydride, and 5% potassium hydroxide solution. Refluxing bromotheophylline I in dilute (1:1) H_2SO_4 leads to trace amounts of 1,3-dimethyluric acid (III), in contrast to 8-nitrotheophylline, which is hydrolyzed quite readily under these conditions [1].

We have observed that the hydrolysis of bromotheophylline I occurs readily in a mixture of refluxing acetic anhydride and a fourfold amount of anhydrous potassium fluoride in 4 h. The resulting potassium salt II gives acid III, with mp 410°C (from water) (see [2]), after dissolving in water and acidification of the solution. IR spectrum (KBr): 3440 (N-H); 1690, 1655 (C=O); 1555, 1420, 1405 cm⁻¹. PMR spectrum (d₆-DMSO): 3.17 (3H, s, 1-CH₃), 3.32 ppm (3H, s, 3-CH₃).



Dry potassium carbonate can be used instead of potassium fluoride. 8-Nitrotheophylline does not undergo a similar reaction.

LITERATURE CITED

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- 2. E. Fischer and H. Clemm, Ber., 30, 3089 (1897).

Kiev Scientific-Research Institute of Pharmacology and Toxicology, Ministry of Public Health, Ukrainian SSR, Kiev 252057. Translated from Khimiya Geterotsiklicheskikh Soedinenii, No. 5, p. 699, May, 1991. Original article submitted June 20, 1990.