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LETTERS TO THE EDITOR

REACTION OF N-BENZYL-3-BENZYLAMINO-4-HYDROXYBUTANAMIDE WITH 5-PHENYL-2,3-DIHYDROFURAN-2,3-DIONE

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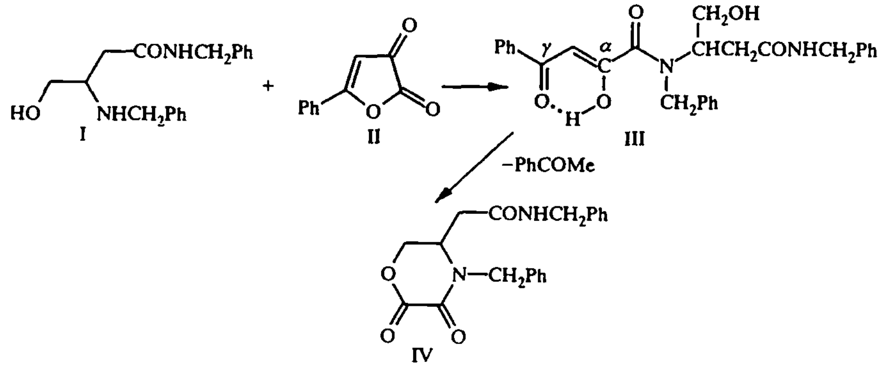
It was shown that as a result of the reaction of N-benzyl-3-benzylamino-4-hydroxybutanamide (I) with 5-phenyl-2,3-dihydrofuran-2,3-dione (II) in conditions excluding thermal decarbonylation of the latter, benzoylpyruvic acid N-benzyl-N-[1-(N′-benzylcarbamoyl)-3-hydroxypropyl-2]amide (III) and 4-benzyl-5-(N-benzylcarbamoylmethyl)tetrahydro-1,4-oxazine-2,3-dione (IV) are formed. Amide III is the product of opening of the dihydrofuran ring in compound II due to nucleophilic attack of the amino group in amino alcohol I at the lactone carbonyl C atom. The second compound IV isolated was obtained previously in the reaction of amide I with diethyl oxalate. The spectral and chromatographic characteristics and melting point of compound IV, obtained by two methods, are also in complete agreement and are reported in [1].



The formation of morpholinedione IV in the given case can be attributed to intramolecular cyclization of amide III due to nucleophilic attack of the CH$_2$OH hydroxyl group at the α-carbonyl carbon atom and subsequent elimination of the acetophenone molecule (ketone splitting).

4-Benzyl-5-(N-benzylcarbamoylmethyl)tetrahydro-1,4-oxazine-2,3-dione (IV). A solution of 0.75 g (0.0025 mole) of aminohydroxybutanamide I in 15 ml of dry toluene was added by drops to a solution of 0.44 g (0.0025 mole) of compound II in 15 ml of dry toluene. The mixture was stirred at room temperature for 3 h and held in the refrigerator for 16 h. The precipitated crystals were filtered off (the filtrate was used for preparation of compound III), and after recrystallization from ethanol, oxazinedione IV was obtained; mp = 79-80°C. Yield of 68%. The spectral and physicochemical properties of compound IV are reported in [1].

Benzoylpyruvic Acid N-benzyl-N-[1-(N′-benzylcarbamoyl)-3-hydroxypropyl-2]amide (III). The filtrate from the preceding experiment was evaporated at low pressure. The precipitated crystals were recrystallized from ethanol and compound III was obtained with a yield of 27%. Mp = 202-203°C. UV spectrum (ethanol), λ_{max}, nm (log ε): 213 (4.47), 270

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(4.26), 350 (4.67). IR spectrum, cm^{-1}: 3200 ($\nu_{NH,OH}$); 1530 (amide II); 1645, 1680 (amide I); 1610 (ketone); 1600 (enol); 3050, 1575, 1600 cm^{-1} (Ph). PMR spectrum ($CDCl_3$): 15.38 (1H, s, OH); 7.10-7.30 (15H, m, Ph); 6.78 (1H, br. s, NH); 5.48 (1H, br. s, OH); 6.98 (1H, s, =CH-); 4.12 (1H, m, CH-N); 2.45 (2H, m, CH_2CO); 3.68 (2H, m, $NHCH_2$); 4.80 (2H, m, NCH_2); 4.11 ppm (2H, m, $HOCH_2$). Found, %: C 71.07; H 6.12; N 6.04. $C_{28}H_{28}N_2O_5$. Calculated, %: C 71.17; H 5.97; N 5.93.

REFERENCE

1. M. A. Tlekhusezh, L. A. Badovskaya, and Z. I. Tyukhteneva, *Khim. Geterotsikl. Soedin.*, No. 5, 711 (1996).