

YENİ BİR 2-BENZİMİDAZOLİNON SENTEZİ

A NEW SYNTHESIS OF 2-BENZIMIDAZOLINONE

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SUMMARY

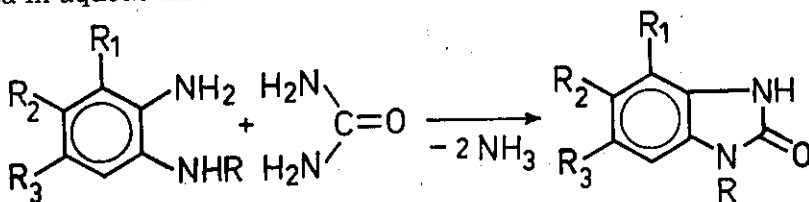
In this work, 2-benzimidazolinone is obtained with a high yield and high purity by condensation of 1,2-diaminobenzene with urea under normal pressure using isoamyl alcohol as the solvent.

ÖZET

Bu çalışmada, 2-benzimidazolinon çözücü olarak izoamil alkol kullanılarak 1,2-diaminobenzen ile ürenin normal basınçta kondenzasyonu ile yüksek verim ve saflıkta elde edilmiştir.

INTRODUCTION

2-benzimidazolinones are useful as intermediates for the preparation of pharmaceuticals, plant protecting agents, plant growth stimulants and azo dyes. These chemicals were prepared in 87-97% yield and with high purity by condensation of 1,2-diaminobenzene derivatives with urea in aqueous medium at 150-160°C. (1).



There are, R = H or CH₃; R₁, R₃ = H or Cl; R₂ = H, CH₃, CH₃O, COOH, SO₃H, C₂H₅O, C₂H₅, Cl, OH, F, Br or CH₃CO. 1,2-diaminobenzene derivatives were optionally prepared from the corresponding 2-nitroanilines by hydrogenation during the condensation.

In this work, 2-benzimidazolinone is obtained by condensation of 1,2-diaminobenzene with urea under normal pressure using isoamyl alcohol as the solvent.

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EXPERIMENTAL

0.10 mole (10.8 g) 1,2-diaminobenzene and 0.05 mole (3.0 g) urea were added to 25 mL isoamyl alcohol. The reaction mixture was refluxed for about 25 minutes until ammonia evolution ceased. After the mixture was cooled. The white crystalline precipitate formed was filtered and washed with very dilute hydrochloric acid solution to solve the unreacted reactants. The crude product was purified by recrystallization for ethanol.

Melting point: 315°C (decomp.); Yield: 94% (on urea base). IR: 1440 cm^{-1} (N-H bending), 1020 cm^{-1} (C-O stretching), 1740 cm^{-1} (C=O ketone), 2700-3100 cm^{-1} (intermolecular H-bond). $^1\text{H-NMR}$: δ (ppm), 3.465 (N-H), 6.937 (Ar-H), 10.629 (H-bond). Elemental analysis: Calculated for $\text{C}_7\text{H}_6\text{N}_2\text{O}$ (134.14), C: 62.68%, H: 4.50% and N: 20.88%; Found, C: 62.51%, H: 4.77% and N: 19.66%.

DISCUSSION

Mistry and Guha with a similar procedure obtained a compound with a melting point of 311°C and they proposed the name of this compound as 2,2'-diaminocarbanilide (2). Upon investigation of the IR and NMR spectrums and the elemental analysis of this compound should be named as 2-benzimidazolinone. In conclusion Mistry and Guha were wrong on naming this compound.

REFERENCES

1. Junker, P., Mees, B., Ribka, J. : *Ger. Offen.* 2 131 367, 28 Dec. 1972; *C.A.*, 78, 84413 h (1972).
2. Mistry, S.M., Guha, P.C. : *J. Indian Chem. Soc.*, 7, 793-797 (1930).