

SINTESIS SENYAWA 4-FENIL-2,6-BIS(4-AMINOFENIL)PIRIDIN SEBAGAI KEMOSENSOR KOLORIMETRI DAN FLUORESENSI FORMALDEHIDA

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INTISARI

Sintesis senyawa turunan 2,4,6-triaril piridin telah dilakukan. Senyawa hasil sintesis diuji sebagai kemosensor kolorimetri dan fluoresensi terhadap formaldehida sebagai substrat serta ditentukan limit deteksinya.

Tahap pertama sintesis *one-pot* dilakukan dengan mensintesis senyawa 4-fenil-2,6-bis(4-nitrofenil)piridin (**1**) menggunakan bahan dasar benzaldehida dan 4-nitroasetofenon. Sintesis tahap kedua dilakukan dengan mereduksi gugus nitro menjadi senyawa 4-fenil-2,6-bis(4-aminofenil)piridin (**2**) menggunakan HCl 37 % dan logam Sn. Hasil sintesis senyawa **1** dan **2** dilakukan elusidasi struktur dengan spektroskopi FTIR, ¹H-NMR dan *direct inlet*-MS. Senyawa **1** diperoleh sebanyak 78,3 % sedangkan senyawa **2** diperoleh sebanyak 68,9 %. Uji kemosensor senyawa **2** terhadap formaldehida menunjukkan perubahan warna dari tak berwarna menjadi kuning, sedangkan secara fluoresensi menunjukkan perubahan panjang gelombang emisi dari 489 nm menjadi 442 nm. Limit deteksi secara kolorimetri sebesar 142 ppm dan fluoresensi sebesar 6,2 ppm.

Kata kunci: fluoresensi, formaldehida, kemosensor, piridin.

**SYNTHESIS OF 4-PHENYL-2,6-BIS(4-AMINOPHENYL)PYRIDINE
COMPOUND AS COLORIMETRIC AND FLUORESCENCE
CHEMOSENSOR OF FORMALDEHYDE**

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ABSTRACT

The synthesis of 2,4,6-triarylpyridine derivative compounds has been done. The synthesized compound was tested as colorimetric and fluorescence chemosensor against formaldehyde as substrate and the limit of detection was determined.

First step of one-pot synthesis has been done by synthesizing of 4-phenyl-2,6-bis(4-nitrophenyl)pyridine (**1**) compound between benzaldehyde and 4-nitroacetophenone. The second step synthesis has been done by reduction of nitro group to get 4-phenyl-2,6-bis(4-aminophenyl)pyridine (**2**) compound using HCl 37 % and Sn metal. The synthesized compounds **1** and **2** were elucidated by FTIR spectroscopy, ¹H-NMR and direct inlet-MS. Compound **1** was obtained in 78.3 % yield while compound **2** was 68.9 %. Chemosensor assay of compound **2** against formaldehyde showed the alteration of its color from colorless to yellow, while fluorescence assay showed the wavelength of emission changed from 489 nm to 442 nm. The limit of detection by colorimetry was obtained at 142 ppm and by fluorescence was 6.2 ppm.

Keywords: fluorescence, formaldehyde, chemosensor, pyridine.