

SINTESIS 3-(4-HIDROKSI-3-METOKSI-FENIL)-2-(1H-TETRAZOL-5-IL)AKRILONITRIL SEBAGAI KEMOSENSOR FLUORESENSI AMINA

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INTISARI

Telah dilakukan sintesis senyawa tetrazol (3-(4-hidroksi-3-metoksi-fenil)-2-(1H-tetrazol-5-il)akrilonitril) dari bahan dasar vanilin, serta uji aktivitasnya sebagai kemosensor fluoresensi terhadap amina. Sintesis senyawa tetrazol dilakukan melalui reaksi kondensasi Knoevenagel dan dilanjutkan dengan reaksi sikloadisi 1,3-dipolar dengan mereaksikan vanilin dengan malononitril dalam air tanpa penambahan katalis pada suhu 90 °C selama 2 jam. Kemudian ditambahkan natrium azida (NaN₃) dan dilanjutkan refluks selama 48 jam pada suhu yang sama. Produk yang terbentuk diidentifikasi strukturnya dengan KLT, pengukuran titik leleh, FT-IR dan *Direct Inlet*-MS.

Senyawa tetrazol yang diperoleh berupa padatan berwarna hijau kecoklatan dengan titik lebur 234-237 °C dan randemen sebesar 15,43%. Uji kemosensor senyawa tetrazol terhadap amina menunjukkan respon OFF-ON fluoresensi dan pergeseran batokromik ke daerah pada panjang gelombang emisi 595 nm.

Kata kunci: fluorosensi, sensor amina, tetrazol, vanilin.

***SYNTHESIS OF 3-(4-HYDROXY-3-METHOXY-PHENYL)-2-(1H-
TETRAZOLE-5-YL)ACRYLONITRILE AS FLUORESCENCE
CHEMOSENSOR OF AMINE***

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ABSTRACT

Synthesis of 3-(4-hydroxy-3-methoxyphenyl)-2-(1*H*-tetrazole-5-yl)acrylonitrile from vanillin and the activity test as a fluorescence chemosensor of amine has been done. Synthesis of tetrazole was obtained by the Knoevenagel condensation reaction and followed by 1,3-dipolar cycloaddition between vanillin and malononitrile in water without catalyst at 90 °C for 2 hours. Then, sodium azide (NaN₃) was added and the reflux was continued for 48 hours at the same temperature. The structures of products were identified by TLC, the measurement of melting point, FT-IR, and *Direct Inlet-MS*.

The tetrazole was obtained a brownish-green solid with melting point of 234-237 °C and yield of 15.43%. The chemosensor assay of tetrazole against amine showed the OFF-ON fluorescence response and bathochromic shift to the wavelength of emission at 595 nm.

Keywords: fluorescence, amine sensor, tetrazole, vanillin.