

**PENENTUAN NILAI pKa INDIKATOR TITRASI
ASAM-BASA 4-((2-(2,4-DINITROFENIL)HIDRAZON)METIL)-2-
METOKSIFENOL DARI VANILIN DENGAN METODE
SPEKTROFOTOMETRI UV-VIS**

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INTISARI

Sintesis dan penentuan nilai pKa senyawa 4-((2-(2,4-dinitrofenil)hidrazon)metil)-2-metoksifenol dari vanilin telah dilakukan menggunakan metode spektrofotometri UV-Vis. Penelitian diawali dengan melakukan sintesis senyawa 4-((2-(2,4-dinitrofenil)hidrazon)metil)-2-metoksifenol melalui reaksi adisi-eliminasi antara vanilin dan 2,4-dinitrofenilhidrazin dengan katalis asam. Senyawa hidrazon hasil sintesis diidentifikasi dengan spektrofotometer inframerah untuk mengetahui gugus-gugus fungsinya dan titik lebur untuk menentukan kemurniannya. Nilai pKa senyawa 4-((2-(2,4-dinitrofenil)hidrazon)metil)-2-metoksifenol ditentukan dengan mengukur serapan menggunakan spektrofotometer UV-Vis yang metodenya telah divalidasi menggunakan indikator fenolftalein. Penentuan nilai pKa diawali dengan melarutkan senyawa 4-((2-(2,4-dinitrofenil)hidrazon)metil)-2-metoksifenol ke dalam pelarut campuran air dan etanol (20:80), kemudian dibuat dalam suasana asam dan basa. Hasil pengukuran berupa nilai absorbansi larutan disubstitusikan ke persamaan Henderson-Hasselbalch.

Sintesis senyawa 4-((2-(2,4-dinitrofenil)hidrazon)metil)-2-metoksifenol menghasilkan rendemen sebesar 33,4% dengan titik leleh 269,9-271,6 °C. Nilai pKa senyawa 4-((2-(2,4-dinitrofenil)hidrazon)metil)-2-metoksifenol adalah $12,908 \pm 0,287$.

Kata kunci: vanilin, hidrazon, indikator titrasi, pKa, spektrofotometri UV-Vis

**DETERMINATION OF pKa VALUE OF 4-((2-(2,4-DINITROPHENYL)
HYDRAZONE)METHYL)-2-METHOXYPHENOL FROM VANILLIN AS
INDICATOR FOR ACID-BASE TITRATION USING UV-VIS
SPECTROPHOTOMETRY METHOD**

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ABSTRACT

Synthesis and determination of pKa value of 4-((2-(2,4-dinitrophenyl)hydrazone)methyl)-2-methoxyphenol from vanillin by using UV-Vis spectrophotometry method have been conducted. Synthesis was done by reacting vanillin and 2,4-dinitrophenylhydrazine through the addition-elimination reaction with an acid catalyst. The functional group of the product was identified by using Infrared Spectrophotometer while its purity was determined by knowing the melting point. The pKa value of 4-((2-(2,4-dinitrophenyl)hydrazone)methyl)-2-methoxyphenol compound was determined by measuring the absorbance using validated UV-Vis spectrophotometry method from phenolphthalein indicator. Then, hydrazone was dissolved in water-ethanol mixture (20:80), then converted into acid and base conditions. The results of the absorbance measurement were plugged into Henderson-Hasselbalch's equation.

Synthesis of 4-((2-(2,4-dinitrophenyl)hydrazone)methyl)-2-methoxyphenol yielded 33.4% with melting point at 269.9-271.6 °C. pKa value of 4-((2-(2,4-dinitrophenyl)hydrazone)methyl)-2-methoxyphenol was 12.908 ± 0.287 .

Key words: vanillin, hydrazone, indicator, pKa, UV-Vis spectrophotometry