

## **SINTESIS TURUNAN EUGENOL MELALUI REAKSI HIDROHALOGENASI DAN UJI AKTIVITASNYA SEBAGAI ANTIOKSIDAN**

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### **INTISARI**

Sintesis senyawa turunan eugenol 4-(2-bromopropil)-2-metoksifenol dan 4-(2-kloropropil)-2-metoksifenol beserta uji aktivitas antioksidannya telah dilakukan. Sintesis dilakukan dengan metode hidrohalogenasi yang berlangsung melalui reaksi Markovnikov terhadap bahan dasar eugenol menggunakan HBr 47% dan HCl 37% dengan dimediasi silika gel 60. Reaksi dilanjutkan dengan pendiaman pada suhu ruang kemudian diekstraksi dan asam halida yang masih tersisa dihilangkan dengan larutan  $\text{NaHCO}_3$  jenuh. Karakterisasi senyawa hasil sintesis dilakukan dengan uji KLT, GC-MS, dan FTIR. Uji aktivitas antioksidan dilakukan dengan metode DPPH (2,2-difenil-1-pikrilhidrazil) dan kuersetin sebagai kontrol positif.

Reaksi halogenasi menghasilkan turunan eugenol 4-(2-bromopropil)-2-metoksifenol dan 4-(2-kloropropil)-2-metoksifenol yang berwujud cairan coklat kehitaman dengan persen hasil masing-masing 37,57% dan 71,6%. Uji aktivitas antioksidan menunjukkan bahwa senyawa 4-(2-bromopropil)-2-metoksifenol dan 4-(2-kloropropil)-2-metoksifenol berpotensi sebagai antioksidan dengan nilai  $\text{IC}_{50}$  masing-masing 6,87 dan 5 mM.

Kata kunci : antioksidan, eugenol, hidrohalogenasi

## **SYNTHESIS OF EUGENOL DERIVATIVES THROUGH HYDROHALOGENATION REACTION AND THEIR ACTIVITY TEST AS ANTIOXIDANTS**

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### **ABSTRACT**

The synthesis of eugenol derivatives, 4-(2-bromopropyl)-2-methoxyphenol and 4-(2-chloropropyl)-2-methoxyphenol, along with their antioxidant activity tests has been conducted. The synthesis was performed via hydrohalogenation of eugenol using 47% HBr and 37% HCl, mediated by silica gel 60. The reaction mixture was left to stand at room temperature for 288 h. Afterward, the mixture was extracted, and any remaining halide acid was removed with a saturated NaHCO<sub>3</sub> solution. The synthesized products were characterized using Thin Layer Chromatography (TLC), Gas Chromatography-Mass Spectrophotometer (GCMS), and Fourier Transform Infrared (FTIR) spectroscopy. Additionally, the antioxidant activity was evaluated using the DPPH (2,2-diphenyl-1-picrylhydrazyl) method, with quercetin serving as the positive control.

The halogenation reaction produced the eugenol derivatives, 4-(2-bromopropyl)-2-methoxyphenol and 4-(2-chloropropyl)-2-methoxyphenol, as a blackish brown liquid, with yields of 37.57% and 71.6%, respectively. The antioxidant activity tests revealed that these compounds have potential as antioxidants, with IC<sub>50</sub> values of 6.87 and 5 mM, respectively.

**Keywords:** antioxidant, eugenol, hydrohalogenation