

SINTESIS SENYAWA 4-(4-HIDROKSI FENIL)-3-BUTEN-2-ON DAN 4-(4-HIDROKSI FENIL)-2-BUTANON SERTA UJI POTENSI SEBAGAI PEMIKAT LALAT BUAH HAMA

Maria Yoandarta Imbul Maun

19/448761/PPA/05844

INTISARI

Sintesis senyawa 4-(4-hidroksifenil)-3-buten-2-on melalui reaksi kondensasi aldol silang antara 4-hidroksibenzaldehida dan aseton menggunakan radiasi ultrasonik dan sintesis senyawa 4-(4-hidroksifenil)-2-butanon melalui reaksi reduksi serta uji potensi senyawa 4-(4-hidroksifenil)-2-butanon sebagai pemikat lalat buah hama telah dilakukan. Tujuan penelitian ini adalah untuk mendapatkan senyawa pemikat lalat buah hama yang baru selain *cue lure*.

Sintesis senyawa 4-(4-hidroksifenil)-3-buten-2-on melalui satu tahap reaksi kondensasi aldol silang dengan mereaksikan aseton dan NaOH 30% (b/v) serta 4-hidroksibenzaldehida secara bersamaan dalam *ultrasonicator bath* selama 60 menit. Tahap berikutnya yaitu sintesis senyawa 4-(4-hidroksifenil)-2-butanon melalui reaksi reduksi produk kondensasi aldol silang dengan katalis $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ dan NaBH_4 . Produk sintesis dianalisis dengan FT-IR, GC-MS, $^1\text{H-NMR}$ dan $^{13}\text{C-NMR}$.

Hasil penelitian menunjukkan bahwa sintesis senyawa 4-(4-hidroksifenil)-3-buten-2-on menghasilkan padatan berwarna kuning dengan persen hasil sebesar 78,85%, titik leleh 103 °C dengan kemurnian 100%. Hasil sintesis senyawa 4-(4-hidroksifenil)-2-butanon menghasilkan cairan kental berwarna kuning dengan persen hasil sebesar 14,64%. Uji potensi sebagai pemikat lalat buah hama menunjukkan bahwa senyawa 4-(4-hidroksifenil)-2-butanon dapat memikat lalat buah hama (*Bactrocera* spp).

Kata kunci : pemikat, radiasi ultrasonik, kondensasi aldol silang, reduksi

**SYNTHESIS OF 4-(4-HYDROXY PHENYL)-3-BUTEN-2-ON AND
4-(4-HYDROXY PHENYL)-2-BUTANONE COMPOUNDS AND
POTENTIAL TEST AS PEST FRUIT FLY ATTRACTANT**

Maria Yoandarta Imbul Maun
19/448761/PPA/05844

ABSTRACT

The synthesis of 4-(4-hydroxyphenyl)-3-buten-2-on via a crossed aldol condensation reaction between 4-hydroxybenzaldehyde and acetone using ultrasonic irradiation and the synthesis of 4-(4-hydroxyphenyl)-2-butanone via a reduction reaction as well as the potential test of 4-(4-hydroxyphenyl)-2-butanone as a pest fruit fly lure were conducted. The purpose of this research is to obtain a new pest fruit fly lure compound in addition to cue lure.

The synthesis of 4-(4-hydroxyphenyl)-3-buten-2-on was carried out through a one-stage cross aldol condensation reaction by reacting acetone and 30% (w/v) NaOH and 4-hydroxybenzaldehyde simultaneously in an ultrasonicator bath for 60 minutes. The next step was the synthesis of 4-(4-hydroxyphenyl)-2-butanone through the reduction reaction of the aldol cross condensation product with $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ and NaBH_4 catalysts. The synthesis products were analyzed by FT-IR, GC-MS, $^1\text{H-NMR}$ and $^{13}\text{C-NMR}$.

The results showed that the synthesis of 4-(4-hydroxyphenyl)-3-buten-2-on compounds produced yellow solids with a yield of 78.85%, melting point of 103 °C with 100% purity. The synthesis of 4-(4-hydroxyphenyl)-2-butanone compound produced a yellow viscous liquid with a yield of 14.64%. The potential test as a pest fruit fly attractant showed that the compound 4-(4-hydroxyphenyl)-2-butanone can attract pest fruit flies (*Bactrocera* spp).

Keywords: attractant, ultrasonic irradiation, aldol cross condensation, reduction