

## **SINTESIS ANALOG KHALKON DAN UJI AKTIVITAS TABIR SURYA SECARA *IN VITRO***

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### **INTISARI**

Telah dilakukan sintesis tiga analog senyawa khalkon dan uji tabir surya secara *in-vitro*. Senyawa kalkon disintesis dari veratraldehida dan anisaldehida dengan 2,4 dihidroksiasetofenon dan 2-hidroksiasetosenon melalui kondensasi Claisen-Schmidt dalam suasana basa. Senyawa 2',4'-dihidroksi-3,4-dimetoksikhalkondisintesis dari veratraldehida dan 2,4-dihidroksiasetofenon, Senyawa 2',4'-dihidroksi-4-metoksikhalkondisintesis dari anisaldehida dan 2,4-dihidroksiasetofenon, sedangkan senyawa 2'-hidroksi-4-metoksikhalkondisintesis dari anisaldehida dan 2-hidroksiasetofenon. Reaksi dilakukan dengan penambahan KOH 40% melalui pengadukan pada temperatur kamar selama 48 jam. Produk hasil sintesis dikarakterisasi dengan spektrometer FT-IR, GC-MS, dan <sup>1</sup>H-NMR. Senyawa khalkon yang dihasilkan diuji aktivitasnya sebagai senyawa tabir surya secara *invitro* menggunakan spektrofotometer UV-Vis.

Hasil penelitian menunjukkan bahwa senyawa 2',4'-dihidroksi-3,4-dimetoksikhalkon, 2',4'-dihidroksi-4-metoksikhalkon, dan 2'-hidroksi-4-metoksikhalkon berhasil disintesis dengan rendemen masing-masing sebesar 36,94%, 88,89% dan 62,20%. Uji aktivitas secara *in vitro* menunjukkan ketiga senyawa tersebut memiliki nilai SPF dengan kategori maksimal terhadap sinar UV A pada konsentrasi 15 µg/mL dengan nilai SPF 9,749 untuk 2',4'-dihidroksi-3,4-dimetoksikhalkon; 11,995 untuk 2',4'-dihidroksi-4-metoksikhalkon dan 9,594 untuk 2'-hidroksi-4-metoksikhalkon.

Kata kunci : khalkon, tabir surya, *in vitro*

## **SYNTHESIS OF CHALCONE DERIVATIVES AND IN VITRO TEST OF SUNSCREEN ACTIVITY**

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### **ABSTRACT**

Synthesis of chalcone derivatives and in vitro test of sunscreen activity have been carried out. Chalcone was synthesized from 3,4-dimethoxyacetophenone and 4-methoxyacetophenone through Claisen-Schmidt condensation. 2',4'-dihydroxy-3,4-dimethoxychalcone was produced from 3,4-dimethoxybenzaldehyde and 2,4-dihydroxyacetophenone; 2',4'-dihydroxy-4-methoxychalcone was produced from 4-methoxybenzaldehyde and 2,4-dihydroxyacetophenone; 2'-hydroxy-4-methoxychalcone was produced from 4-methoxybenzaldehyde and 2-hydroxyacetophenone. The synthesis was performed by using KOH 40% under stirring at room temperature for 48 h. All the synthesized compounds were characterized using FTIR, GC-MS and <sup>1</sup>H NMR spectrometers. Further, all the chalcone were screened for their *invitro* sunscreen activities by using UV-Vis spectrophotometer.

The result showed that 2',4'-dihydroxy-3,4-dimethoxychalcone, 2',4'-dihydroxy-4-methoxychalcone, and 2'-hydroxy-3-methoxychalcone have been successfully synthesized in 36.94%, 88.89%, and 62.20% yield. The activity of in vitro test showed all the chalcone derivatives have SPF values with maximal protection category against UV A at the concentration 15 µg/mL. 2',4'-dihydroxy-3,4-dimethoxychalcone; 2',4'-dihydroxy-4-methoxychalcone and 2'-hydroxy-3-methoxychalcone resulted in SPF of 9.75; 11.99 and 9.59, respectively.

Keyword : chalcone, sunscreen , in vitro