



***SYSTEMATIC LITERATURE REVIEW: PENGARUH  
KURKUMIN SEBAGAI ANTIINFLAMASI TERHADAP  
KADAR C-REACTIVE PROTEIN (CRP) PADA BERBAGAI  
PENYAKIT INFLAMASI***

**SKRIPSI**

**Untuk Memenuhi Persyaratan  
Memperoleh Gelar Sarjana Kedokteran**



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**Andrie Devin Susilo Hadi**

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**PROGRAM STUDI KEDOKTERAN  
FAKULTAS KEDOKTERAN  
UNIVERSITAS ISLAM MALANG  
2021**



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## RINGKASAN

**Hadi, Andrie D.S.** Fakultas Kedokteran, Universitas Islam Malang, Desember 2020. *Systematic Literatur Review: Pengaruh Kurkumin sebagai Antiinflamasi terhadap Kadar C-Reactive Protein (CRP) pada Berbagai Penyakit Inflamasi.* Pembimbing 1: Doti Wahyuningsih. Pembimbing 2: Marindra Firmansyah.

**Pendahuluan:** *C-Reactive Protein (CRP)* merupakan protein yang dihasilkan pada fase akut dari kondisi inflamasi yang sampai sekarang digunakan sebagai penanda sistemik di klinis. Kurkumin dilaporkan memiliki pengaruh sebagai antiinflamasi. Studi Pustaka sistematis ini dilakukan untuk mempelajari pengaruh kurkumin terhadap penurunan kadar CRP pada berbagai kelainan yang patofisiologinya melibatkan inflamasi. Pada studi ini dipelajari pengaruh kurkumin pada CRP dari kelainan: metabolisme, keganasan, infeksi, dan intoksikasi.

**Metode:** Studi Pustaka sistematis. Data dikumpulkan dari *PubMed* dan *Google Scholar* berdasarkan kata kunci *Curcumin*, *C-Reactive Protein*, dan *Inflammation*. Proses *screening* menghasilkan 16 artikel yang memenuhi kriteria inklusi yang ditetapkan untuk ditelaah.

**Hasil:** Kurkumin terbukti mampu menurunkan kadar CRP pada berbagai kondisi inflamasi. Dalam penelitian ini dilaporkan Kurkumin bekerja dengan menghambat *Tumor Necrosis Factor- $\alpha$*  (TNF- $\alpha$ ), Interleukin-1 $\beta$  (IL-1 $\beta$ ), Interleukin-6 (IL-6) serta menghambat aktivasi faktor transkripsi *Nuclear Factor-Kappa B* (NF- $\kappa$ B).

**Kesimpulan:** Kurkumin mampu menurunkan kadar CRP pada berbagai kondisi inflamasi.

**Kata Kunci :** Kurkumin, C-Reactive Protein, Inflamasi

## SUMMARY

**Hadi, Andrie D.S.** Faculty of Medicine, Malang Islamic University, December 2021. Systematic Literatur Review: Systematic Literature Review: The Effect of Curcumin as Anti Inflammatory on C-Reactive Protein Level in Inflammatory Diseases . Supervisor 1: Doti Wahyuningsih. Supervisor 2: Marindra Firmansyah.

**Background:** C-Reactive Protein (CRP) is a protein produced in acute phase of inflammatory conditions which until now has been used as a clinical systemic marker. Curcumin was reported to have anti-inflammatory effects. This systematic literature study was conducted to learn the effect of curcumin on decreasing CRP levels in pathophysiological disorders implicate inflammation. This work studies the effect of curcumin to CRP levels in: metabolism, malignancy, infection, and intoxication.

**Method:** Systematic literature study. Data were collected from PubMed and Google Scholar based on the keywords Curcumin, C-Reactive Protein, and Inflammation. The screening process resulted in 16 articles that met the inclusion criteria set for review.

**Result:** Curcumin was shown to be able to reduce CRP levels in inflammatory conditions. This study reports Curcumin works by inhibit pro-inflammatory cytokines Tumor Necrosis Factor- $\alpha$  (TNF- $\alpha$ ), Interleukin-1 $\beta$  (IL-1 $\beta$ ), Interleukin-6 (IL-6) as well as inhibit the activation of transcription factor Nuclear Factor-Kappa B (NF- $\kappa$ B).

**Conclusion:** Curcumin was able to reduce CRP levels in inflammatory conditions.

**Keyword:** Curcumin, C-Reactive Protein, inflammatio

## BAB I

### PENDAHULUAN

#### 1.1 Latar Belakang

Inflamasi merupakan respon kompleks biologi dari jaringan pembuluh darah terhadap stilmulus berbahaya seperti patogen, sel-sel tubuh yang rusak, atau iritan. Tanpa inflamasi, luka dan infeksi sulit untuk sembuh dan dapat mengakibatkan kerusakan jaringan (Egesie *et al.*, 2011). Pada saat terjadinya suatu inflamasi, berbagai mediator pro inflamasi berupa IL-1, *Tumor Necrosis Factor* (TNF), Interferon (INF)-c, IL-6, IL-12, dan IL-18 akan mengaktifkan *C-Reactive Protein* (CRP) (Pearson, 2011).

*C-Reactive Protein* (CRP) merupakan suatu *marker* inflamasi sistemik non spesifik yang dihasilkan oleh hepatosit (Pearson, 2011). Protein ini merupakan protein fase akut yang dijadikan sebagai penanda sistemik secara sensitif pada kondisi peradangan. *C-Reactive Protein* dijadikan penanda peradangan yang ideal dan sering digunakan sebagai parameter tes klinis untuk mendiagnosa dan melakukan prognosis penyakit inflamasi karena tesnya yang mudah dilakukan dan memiliki respon yang tepat (Chandrashekar, 2014). Kadar CRP yang meningkat dalam tubuh hingga 100 kali lipat dapat dijadikan sebagai penanda terjadinya inflamasi yang dapat disebabkan oleh berbagai kondisi (Utama, 2012). Golongan penyakit yang ditandai dengan adanya peningkatan CRP pada manusia antara lain pada golongan penyakit metabolisme (Mazidi *et al.*, 2016),

keganasan (Upadhyay, 2016), infeksi (Li *et al.*, 2020), dan intoksisitas (Askari *et al.*, 2013).

Selama ini tanaman kunyit digunakan oleh masyarakat Jawa sebagai minuman jamu. Salah satu kandungan zat aktif pada tanaman kunyit (*Curcuma longa*) adalah kurkumin (Liebert, 2011). Kurkumin dilaporkan memiliki potensi sebagai antiinflamasi dan antioksidan dan senyawa ini mempengaruhi secara langsung regulator inflamasi dengan cara menurunkan aktivasi NF- $\kappa$ B dan CRP (Borashan *et al.*, 2010).

Meskipun banyak dilaporkan di klinis bahwa berbagai penyakit ditandai dengan peningkatan kadar CRP, namun kemampuan kurkumin dalam menurunkan CRP dari berbagai kelainan belum di ulas. Penelitian ini mempelajari efek kurkumin terhadap penurunan kadar *C-Reactive Protein* (CRP) pada berbagai kondisi patologis yang melibatkan proses inflamasi utamanya golongan penyakit karena : 1) metabolisme, 2) keganasan, 3) infeksi dan 4) intoksisitas pada jurnal internasional terakreditasi. Penelitian dilaksanakan dengan metode *systematic literature review*. Hasil penelitian ditunjukkan untuk mendasari dan menguatkan penggunaan kurkumin di klinis dalam menurunkan kadar CRP pada berbagai kelainan yang patofisiologinnya melibatkan inflamasi.

## 1.2 Rumusan Masalah

Adapun rumusan masalah yang diangkat dari penelitian studi pustaka ini adalah:

Berdasarkan studi *systematic literature review*, apakah kurkumin menurunkan kadar *C-Reactive Protein* (CRP) pada berbagai penyakit yang patofisiologinya melibatkan proses inflamasi?

## 1.3 Tujuan Penelitian

Penelitian ini bertujuan antara lain:

Mengetahui pengaruh kurkumin terhadap kadar *C-Reactive Protein* (CRP) pada berbagai penyakit yang patofisiologinya melibatkan proses inflamasi melalui studi *systematic literature review*.

## 1.4 Manfaat Penelitian

Penelitian ini diharapkan dapat memberikan manfaat sebagai berikut:

### 1.4.1 Manfaat Teoritik

Penelitian ini mengungkapkan kemampuan kurkumin dalam penurunan kadar *C-Reactive Protein* (CRP) pada berbagai model penyakit yang patofisiologinya melibatkan proses inflamasi.

### 1.4.2 Manfaat Praktis

Menjadi dasar penggunaan kurkumin di klinis untuk menurunkan kadar *C-Reactive Protein* (CRP) pada berbagai penyakit yang patofisiologinya melibatkan inflamasi.



## BAB VII

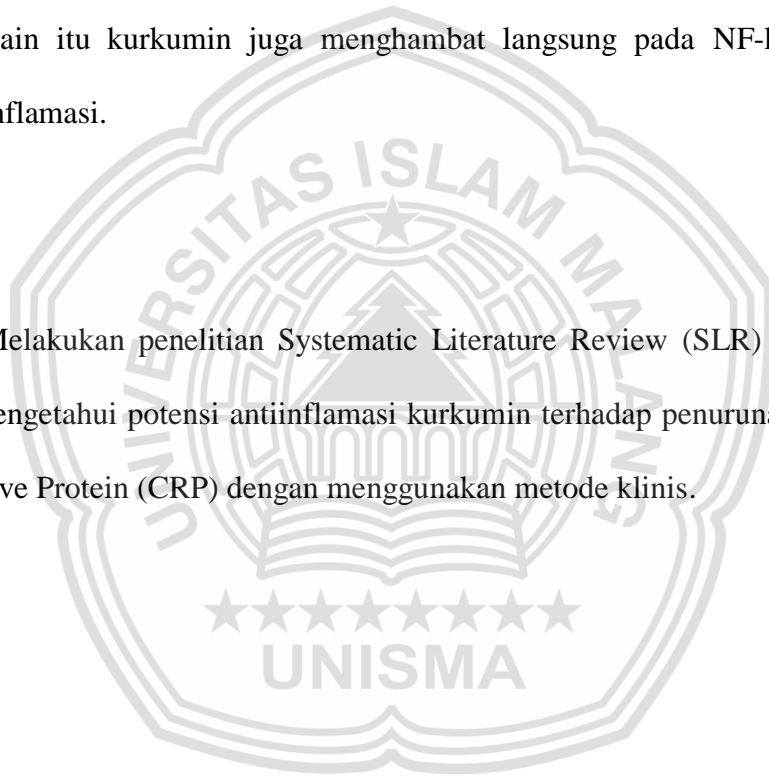
### PENUTUP

#### 7.1 Kesimpulan

Kandungan zat aktif kurkumin terbukti mampu menurunkan kadar C-Reactive Protein. Mekanisme utama antiinflamasi kurkumin dilaporkan melalui penghambatan langsung pada sitokin pro inflamasi TNF- $\alpha$ , IL-1 $\beta$  dan IL-6. Selain itu kurkumin juga menghambat langsung pada NF-kB pada kondisi inflamasi.

#### 7.2 Saran

Melakukan penelitian Systematic Literature Review (SLR) lanjutan untuk mengetahui potensi antiinflamasi kurkumin terhadap penurunan kadar C-Reactive Protein (CRP) dengan menggunakan metode klinis.



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