

## INTISARI

*Curcumin* merupakan polimer yang dihasilkan dari proses ekstraksi *curcuma* yang berasal dari kunyit, temulawak, temu ireng. *Curcuma* memiliki sifat-sifat antikoagulasi, anti proliferasi dan anti-inflamasi, sehingga dapat digunakan untuk mencegah restenosis pada *stent* setelah implantasi. Pada penelitian ini dilakukan penyelidikan tentang pelapisan *curcumin* dengan menggunakan polimer *chitosan* yang dapat terbiodegradasi sebagai pembawa obat yang dibuat secara seragam pada permukaan *disk* paduan *Co-Cr* dengan metode *ultrasonic spray*. Penelitian yang dilakukan bertujuan untuk mengidentifikasi keberadaan *curcumin* dan *chitosan* didalam campuran *curcumin-chitosan*, data kekasaran permukaan setelah pelapisan dan data jumlah pelepasan *in vitro curcumin* pada pelapisan campuran *curcumin-chitosan*.

Tiga takaran *curcumin-chitosan* yang digunakan yaitu CC-25 (90% volume larutan 250 µg/ml *curcumin* – 10% larutan 250 µg/ml *chitosan*), CC-50 (90% volume larutan 500 µg/ml *curcumin* – 10% larutan 250 µg/ml *chitosan*) dan CC-80 (90% volume larutan 800 µg/ml *curcumin* – 10% larutan 250 µg/ml *chitosan*). Pengujian FTIR dan SEM digunakan untuk mengidentifikasi keberadaan *curcumin* dan *chitosan* didalam campuran *curcumin-chitosan*, sedangkan data kekasaran permukaan setelah pelapisan didapatkan menggunakan uji kekasaran. Jumlah *curcumin* yang terlepas dalam periode pelepasan dihitung menggunakan UV-Vis *spectrometer*.

Hasil penelitian menunjukkan bahwa serapan spektrum *curcumin* dan spektrum *chitosan* muncul dalam pelapisan *curcumin-chitosan*. Lapisan *curcumin-chitosan* yang terbentuk halus dan seragam dengan nilai kekasaran CC-25 sebesar 0,07 µm, CC-50 sebesar 0,11 µm dan CC-80 sebesar 0,13. Pengujian pelepasan *in vitro* selama 21 hari menunjukkan jumlah *curcumin* yang terlepas adalah CC-80 sebesar 15,552 µg, CC-50 sebesar 13,063 µg dan CC-25 sebesar 8,797 µg. Berdasarkan hasil penelitian, maka dapat disimpulkan bahwa dalam berbagai campuran larutan *coating* mengandung *curcumin* dan *chitosan*. Meningkatnya konsentrasi *curcumin* meningkatkan nilai kekasaran lapisan *curcumin-chitosan*, dan meningkatkan jumlah *curcumin* yang terlepas selama periode pelepasan *in vitro*.

**Kata kunci :** *Curcumin, Chitosan, Pelapisan, FTIR, Kekasaran Permukaan, Pelepasan In Vitro.*

## ABSTRACT

*Curcumin is a polymer produced from the extraction process of curcuma derived from turmeric, temulawak, temuireng. Curcuma has anticoagulation, anti-proliferation and anti-inflammatory properties, so that it can be used to prevent stent restenosis after implantation. In this study an investigation was carried out on the coating of curcumin using chitosan polymers that could be biodegradable as a carrier of drugs that were made uniformly on the surface of the Co-Cr alloy disk with the ultrasonic spray method. The research carried out aims to identify the presence of curcumin and chitosan in curcumin-chitosan mixtures, surface roughness data after coating and data on the amount of release in vitro curcumin in coating curcumin-chitosan mixtures.*

*Three dosages of curcumin-chitosan used are CC-25 (90% volume solution of 250 µg / ml curcumin - 10% solution of 250 µg / ml chitosan), CC-50 (90% volume of solution 500 µg / ml curcumin - 10% solution of 250 µg / ml µg / ml chitosan) and CC-80 (90% volume solution 800 µg / ml curcumin - 10% solution 250 µg / ml chitosan). FTIR and SEM tests were used to identify the presence of curcumin and chitosan in the curcumin-chitosan mixture, while surface roughness data after coating was obtained using a roughness test. The amount of curcumin released during the release period was calculated using a UV-Vis spectrometer.*

*The results showed that the absorption of curcumin spectrum and chitosan spectrum appeared in the curcumin-chitosan coating. Curcumin-chitosan layer formed smooth and uniform with a CC-25 roughness value of 0.07 µm, CC-50 of 0.11 µm and CC-80 of 0.13. In vitro release tests for 21 days showed the amount of curcumin released was CC-80 at 15,552 µg, CC-50 at 13,063 µg and CC-25 at 8,797 µg. Based on the results of the study, it can be concluded that in various mixtures of coating solutions containing curcumin and chitosan. The increased concentration of curcumin increases the roughness value of the curcumin-chitosan layer, and increases the amount of curcumin released during the in vitro release period.*

*Keywords: Curcumin, Chitosan, Coating, FTIR, Surface Roughness, In Vitro Release.*