INTISARI

Penggunaan stent dengan material metal (*bare metal stent*) dalam jangka diketahui dapat mengakibatkan penyempitan kembali pada pembuluh darah. Hal inilah yang membuat penggunaan BMS digantikan dengan *drug eluting stent* (DES). Penelitian lebih lanjut menunjukan bahwa penggunaan polimer pada DES dapat mengakibatkan peradangan dan gumpalan darah pada arteri (thrombosis). Penggunaan polimer pada DES digantikan dengan *polymer-free drug eluting stent* (PF-DES), dimana pada penelitian ini kurkumin digunakan sebagai bahan utama pelapisan DES dengan menggunakan *electophoretic deposition* (EPD) sebagai metode pelapisanya. Pada penelitian ini, variasi konsentrasi kurkumin dikaji pengaruhnya terhadap kekasaran dan morfologi hasil deposisi,berat hasil deposis, ikatan kimia hasil deposisi, dan proses pelepasan kurkumin.

Pengujian *zeta potential* larutan diuji menggunakan *electrophoretic light scattering*, pengujian berat dilakukan sebelum dan sesudah pelapisan, kekasaran permukaan sebelum dan sesudah pelapisan diuji menggunakan *stylus profilometer*, morfologi permukaan diamati dengan menggunakan *scanning electron microscope* (SEM), proses pelepasan kurkumin diuji menggunakan *ultraviolet spectrophotomrtry* (Uv-Vis), dan karakteristik ikatan kimia dievaluasi dengan menggunakan *fourier transform infrared spectroscopy* (FT-IR)

Hasil penelitian menunjukan bahwa konsentrasi kurkumin mempengaruhi berat deposisi, dan kekasaran permukaan hasil pelapisan. Dimana semakin meningkatnya konsentrasi kurkumin, maka semakin meningkat pula berat deposisinya dan semakin kasar permukaan *stent*. Kurkumin terbukti mampu menempel pada SS316l. Proses pelepasan kurkumin menujukan terjadinya tiga fase yaitu, *burst release*, pelepasan lebih lambat dan *second burst*. Kurkumin dengan konsentrasi tinggi terbukti mampu terlepas sepenuhnya selama lebih dari 40 hari.

Kata Kunci: Drug eluting stent, DES, PCI, stent, electrophoretic deposition, kurkumin

ABSTRACK

The use of stents with metal material (bare-metal stents) in the long term is known to cause re-narrowing of blood vessels. This is what makes the use of BMS replaced with a drug-eluting stent (DES). Further studies have shown that the use of polymers in DES can lead to inflammation and blood clots in the arteries (thrombosis). The use of polymer in DES was replaced with a polymer-free drug-eluting stent (PF-DES), where in this study curcumin was used as the primary material for coating DES using electrophoretic deposition (EPD) as the coating method. This study investigated the effect of variations in the concentration of curcumin on roughness and morphology of deposition, weight of deposition, chemical bonding of deposition, and curcumin release process.

The zeta potential test of the solution was tested using electrophoretic light scattering, weight testing was carried out before and after coating, surface roughness before and after coating was tested using a stylus profilometer, surface morphology was observed using scanning electron (SEM), curcumin release process was tested using ultraviolet spectrophotometry (Uv- Vis), and chemical bond characteristics were evaluated using Fourier transport infrared spectroscopy (FT-IR).

The results showed that the concentration of curcumin affected the weight of the deposition, and the surface roughness of the coating. Increasing the concentration of curcumin, the greater the deposition weight and the rougher the surface of the stent. Curcumin is proven to be able to stick to ss316l. The process of opening curcumin leads to three phases, namely, burst release, slower opening and second burst. High concentrations of curcumin have been shown to be fully released for more than 40 days.

Keyword: Drug eluting stent, DES, PCI, stent, electrophoretic deposition, curcumin