Analisis Pengaruh Konsentrasi Zinc Acetate Dihydrate Terhadap Karakteristik Lapisan Electrospinning Polyvinyl Alcohol pada Magnesium sebagai Biomaterial Implan Mampu Luruh = Analysis of the Zinc Acetate Dihydrate Concentration Effect on the Characteristics of Electrospinning Polyvinyl Alcohol Coatings on Magnesium as an Implantable Biomaterial

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Abstrak

Penelitian ini bertujuan mempelajari pengaruh variasi konsentrasi zinc acetate terhadap pelapisan implan magnesium murni menggunakan serat electrospinning poly(vinyl) alcohol. Pengujian meliputi FTIR, diameter serat, porositas, ketebalan, sudut kontak, weight loss, dan laju korosi selama 28 hari. Hasil menunjukkan peningkatan diameter serat, porositas, ketebalan, dan sudut kontak seiring konsentrasi zinc acetate yang meningkat. Diameter serat yang lebih besar menyebabkan weight loss dan laju korosi meningkat pada minggu pertama dan kedua karena interaksi yang lebih mudah dengan magnesium.Kerusakan terparah terlihat pada minggu ketiga dan keempat pada sampel dengan 25% zinc acetate, hal ini dapat disebabkan oleh pelapisan yang kurang sempurna. Penelitian ini memberikan pemahaman tentang pengaruh konsentrasi zinc acetate pada pelapisan implan magnesium. Hasilnya dapat digunakan untuk pengembangan pelapisan tahan korosi pada aplikasi biomedis.
.....This study aims to investigate the impact of varying concentrations of zinc acetate on the coating of pure magnesium implants using electrospun poly(vinyl) alcohol fibers. The conducted tests encompass Fourier-transform infrared spectroscopy (FTIR), fiber diameter analysis, porosity assessment, thickness measurement, contact angle determination, weight loss analysis, and corrosion rate evaluation over a span of 28 days. The findings revealed a correlation between the increase in fiber diameter, porosity, thickness, and contact angle with the concentration of zinc acetate. The augmented fiber diameter contributed to weight loss and an elevated corrosion rate during the initial and second weeks, attributed to enhanced interaction with magnesium. The most severe damage was observed in the third and fourth weeks in samples containing 25% zinc acetate, which may be ascribed to suboptimal coating. This investigation offers insights into the influence of zinc acetate concentration on the magnesium implant coating, thereby facilitating the advancement of corrosion-resistant coatings for biomedical applications.