ELECTROPHORETIC DEPOSITION OF ZEIN/BIOGLASS COMPOSITES WITH INCORPORATION OF ESSENTIAL OILS

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In this study, electrophoretic deposition of zein/Bioglass® on stainless steel electrodes was performed using ethanol /water as a solvent under direct current (DC) field. Z potential of the suspensions was measured at different pHs to define the stability of the suspension and the charge of the particles. Films were produced changing voltage and time of deposition. Due to the amphiphilic structure of zein, the β-sheets exhibits a positive charge which bond with the bioglass to form a composite. While the α-sheets leads the deposition process on the anode. Essential oils were added with the aim of enhance the antibacterial properties of the system. Surface morphology was studied using scanning electron microscopy. The amount of bioglass incorporated into the coating was measured using thermogravimetric analysis. The influence of the incorporation of essential oils was cheked with the antibacterial response using gram negative and gram positive bacteria's. The results showed the influence of the pH in the charge of the particles. The porosity on the surface of the coatings was influenced with voltages higher than 5V