









SYNTHESIS OF CHITOSAN GRAFTED WITH AMINOMETHYL ZINC PHTHALOCYANINE FOR PHOTODYNAMIC THERAPY

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Abstract. This paper reports the synthesis of a substituted aminomethyl zinc phthalocyanine (AmPcZn) and its covalent grafting onto chitosan *via* an ethyl chloroformate-mediated reaction. Chitosan-based copolymers containing 10%, 20%, 30%, and 60% (w/w) AmPcZn were successfully obtained. The chemical structure of the synthesized AmPcZn was confirmed by ¹H-NMR spectroscopy and elemental analysis, which were consistent with the expected molecular composition. The grafting reaction and structural integrity of the resulting copolymers were investigated using Fourier-transform infrared (FTIR) and UV-Vis spectroscopies. FTIR spectra revealed characteristic amide and carbonyl stretching bands, confirming covalent bond formation between chitosan and AmPcZn. UV-Vis measurements showed a concentration-dependent increase in absorbance and a typical splitting of the Q-band with band at 605 nm and 715 nm, indicating the successful incorporation of the phthalocyanine moiety into the polymeric matrix.

Keywords: ZnPc derivative, chitosan, grafting reaction, UV-Vis spectroscopy, FTIR spectroscopy.

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