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NATURAL POLYMER HYDROGELS WITH GOLD NANOPARTICLES FOR BLADDER CANCER CHEMOTHERAPY DELIVERY

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The treatment of bladder cancer is done by transurethral resection for tumor removal, followed by immune or chemotherapy intravesical, according to the stage of the disease. The main objective of this work was to develop and characterize strategies to increase the residence time and specificity of chemotherapy through the application of hydrogels for chemotherapy and /or immunotherapy administration. Natural polymers gellan gum and microcrystalline cellulose were chosen to prepare the hydrogels as they are already widely used in the biomedical area due to characteristics such as the absence of toxicity, high biocompatibility, and biodegradability. Papain-coated gold nanoparticles were added to the gels to promote chemo or immunotherapeutic permeation. Preliminary stability assays were carried out to evaluate the compatibility between the polymeric matrices and the gold nanoparticles. The systems were characterized by Scanning Electron Microscopy, and Fourier Transform Infrared Spectroscopy. The results allowed the identification of the polymer groups present in the formulations, as well as the evaluation of the interactions between the hydrogel network and the nanoparticles. The formulations were suitable for the proposed application.