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PVA HYDROGELS PREPARED BY DISSOLUTION PROCESS DIFFERENT

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Poly (vinyl alcohol) (PVA) is a synthetic polymer, produced by polymerization of vinyl acetate followed by hydrolysis. Several types of PVAs are available on the market, however, their properties depend mostly on vinyl acetate, molecular weight, hydrolysis degree and polymerization conditions. PVA is one of the few semi-crystalline polymers soluble in water and this solubility, however depends also on the degree of polymerization and solution temperature. The hydrolysis degree effect on the dissolution of PVA is due to the formation of strong bonds between hydroxyl groups hydrogen intra- and inter-molecular. Hydrogels PVA presents interesting characteristics to various pharmaceutical and biomedical applications because of their favorable characteristics like biocompatibility, soft consistency when used as membrane besides having excellent transparency. The use of electron beam or gamma radiation, besides promoting the crosslinking of PVA allows obtaining a sterile product and free of toxic residues that might alter the biological activity.
The aim of this work was to study the hydrogels properties synthesized from PVAs, with different degrees of hydrolysis, agar and carrageenan and interference in the process of dissolution. The solubility of the blends were made by autoclave and simple heating and then irradiated with gamma rays from a ^{60}Co source. The characterization of hydrogels was by the evaluation of mechanical properties, crosslinking degree and swelling. The results were more homogeneous among the hydrogels synthesized from blends dissolved in autoclave, whereas there was a better dissolution of the PVA. Furthermore, the hydrogels prepared with more hydrolyzed PVAs presented higher strength and lower elongation