



SYNTHESIS OF PVA/PVP HYDROGELS HAVING TWO LAYERS BY RADIATION AND THEIR PHYSICAL PROPERTIES

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The radiation can induce chemical reaction to modify polymer under even the solid state or in the low temperature. The radiation crosslinking can be easily adjusted by controlling the radiation dose and is reproducible. The finished product contains no residuals of substances required to initiate the chemical crosslinking that can restrict the application possibilities. In these studies, two layer's hydrogel which consisted of urethane membrane and a mixture of polyvinyl alcohol/poly-N-vinylpyrrolidone /glycerin/chitosan was made by gamma-ray irradiation or two steps of "freezing and thawing" and gamma-ray irradiation for wound dressing. The physical properties such as gelation, water absorptivity, and gel strength were examined to evaluate the hydrogels for wound dressing. Urethane was dissolved in solvent, the urethane solution was poured on the mould, and then dried to make the thin membrane. Hydrophilic polymer solutions were poured on the urethane membranes, they were exposed to gamma irradiation or "freezing and thawing" and gamma irradiation doses of 25, 35, 50 and 60kGy to evaluate the physical properties of hydrogels. The physical properties of hydrogels such as gelation and gel strength were improved, and the evaporation speed of water in hydrogel was low when urethane membrane was used.