

Synthesis and Characterization of Modified Poly 2-hydroxyethylmethacrylate Hydrogels

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Hydrogels are those polymers that are capable of imbibing large amount of water without dissolution. These are among one of the best polymeric materials for biomedical applications. Acetyl derivative of gum arabic (AGA-3) of highest DS value was treated with 2-Hydroxyethylmethacrylate (HEMA) in the presence of a redox initiator, ethyleneglycol dimethacrylate (EGDMA) yielded a smooth and hard rod shaped polymer that was a blend of crosslinked PHEMA and AGA followed by iodination in aqueous solution of iodine/potassium iodide (KI) solution. The products were characterized by FTIR, TGA, DSC and

swelling test. The crosslinked AGA-3/PHEMA blends showed an improvement in water resistance and thermal property. The results of various studies showed the interaction of iodine with $>C=O$ groups of AGA-3. Incorporation of a small quantity of AGA-3 affected the internal structural change in the polymer network to an extent to allow a great change in swelling behaviour of the PHEMA based hydrogels. The antimicrobial activity of crosslinked AGA-3/PHEMA blends containing iodine was tested against *E. coli* (Gram negative) bacteria by zone of inhibition method to get an idea about the release of iodine from hydrogels.