ABSTRACT

Biopolymeric hydrogels are extensively used in clinical practice and experimental medicine for a wide range of applications viz., cellular immobilization, tissue engineering, drug delivery, and wound management. In our work entitled "***Preparation of Innovative Cross Linked Hydrogels for Bone Fracture Dressing Applications and Its Enhancement Using Herbal Products***" an attempt was made to formulate stable biopolymeric films with sustained release of herbal products from biodegradable polymer PVA. Optimum concentrations of glycerine, turmeric and *Cissus quadrangularis* were added to enhance the mechanical strength and functional properties of PVA. The biopolymeric blends obtained were then made into films by solution casting and freeze thaw methods. Biopolymeric films with filtered and crude turmeric extract were prepared. Physiochemical properties like thickness and weight were found to remain uniform among different sets of biopolymeric formulations, providing reproducibility of the preparation techniques used. But due to time constraints, FT method was discontinued even though good results were obtained. Other parameters such as spectrophotometric analysis, skin permeability, skin sensitivity, % swelling, FT-IR Spectroscopy, tensile strength, surface morphology were analyzed. It was confirmed that the biopolymeric films with filtered turmeric extract showed maximum water uptake and stability due to their micro crystalline nature, elasticity, crosslinking between PVA and cellulose from the fibre content of turmeric and other desired morphological properties. It was confirmed that the biopolymeric films are not skin sensitive from the negative results obtained from the animal models. Hence, the final product was obtained with optimized concentrations of blends such as turmeric, glycerine and *Cissus quadrangularis* and it proved to be a better choice for bone dressing application.

Keywords: PVA, Solution casting method, biopolymeric films, microcrystalline nature, skin sensitivity.