

## **Collagen Scaffold Incorporated with Macrotyloma uniflorum Plant Extracts as a-Burn/Wound Dressing Material, in Vitro and in Vivo Evaluation**

**Authors :** Thangavelu Muthukumar, Thotapalli Parvathaleswara Sastry

**Abstract :** Collagen is the most abundantly available connective tissue protein, which is being used as a biomaterial for various biomedical applications. Presently, fish wastes are disposed improperly which is causing serious environmental pollution resulting in offensive odour. Fish scales are promising source of Type I collagen. Medicinal plants have been used since time immemorial for treatment of various ailments of skin and dermatological disorders especially cuts, wounds, and burns. Developing biomaterials from the natural sources which are having wound healing properties within the search of a common man is the need of hour, particularly in developing and third world countries. With these objectives in view we have developed a wound dressing material containing fish scale collagen (FSC) incorporated with Macrotyloma uniflorum plant extract (PE). The wound dressing composite was characterized for its physiochemical properties using conventional methods. SEM image revealed that the composite has fibrous and porous surface which helps in transportation of oxygen as well as absorbing wound fluids. The biomaterial has shown 95% biocompatibility with required mechanical strength and has exhibited antimicrobial properties. This biomaterial has been used as a wound dressing material in experimental wounds of rats. The healing pattern was evaluated by macroscopic observations, panimetric studies, biochemical, histopathological observations. The results showed faster healing pattern in the wounds treated with CSPE compared to the other composites used in this study and untreated control. These experiments clearly suggest that CSPE can be used as wound/burn dressing materials.

**Keywords :** collagen, wound dressing, Macrotyloma uniflorum, burn dressing

**Conference Title :** ICBSE 2014 : International Conference on Biomedical Science and Engineering

**Conference Location :** Zurich, Switzerland

**Conference Dates :** January 14-15, 2014