

A Pragmatic Review on the Property, Role and Significance of Polymers in Treating Diabetic Foot Ulcer

Padmapriya B., Esther Jemima Paul

Department of Biomedical Engineering, PSG College of Technology, Coimbatore, India

Email: estherjemi@gmail.com

Abstract

Diabetic Foot Ulcer is one of the traumatic complications that develop due to impaired glycemic control and increased plantar pressure. Addressing the issues of necrosis, ischemia, inflammation, infection and peripheral arterial disease is important to attain a wholesome treatment, depending on the prognostic stage in DFU. PAD leading to uneven plantar pressure can be better treated by off-loading techniques. It is essential to arrest further aggravation of the ulcer, attain ideal wound closure and prevent recurrence. Though various treatment methods have been employed from the past, search for novel dressings are still on the rise, since prevalence of ulcer varies between individual patients and their adapted life style. This review emphasizes the contribution of various natural and synthetic polymeric materials, composite forms and the role of incorporating signalling molecules such as growth factors, cytokines, chemokines, their properties and delivery mechanisms as standard wound dressing in diabetic ulcers. Through extensive study on the occurrence, prognosis, severity and the cellular responses observed at the site, strategic management to alleviate the conditions of the challenging DFU could be made possible.

Keywords: Diabetic Foot Ulcer, ischemia, infection, peripheral arterial disease, signalling molecules, delivery mechanisms