Recent progress in development of dressings used for diabetic wounds with special emphasis on scaffolds

ABSTRACT

Diabetic wound (DW) is a secondary application of uncontrolled diabetes and affects about 42.2% of diabetics. If the disease is left untreated/uncontrolled, then it may further lead to amputation of organs. In recent years, huge research has been done in the area of wound dressing to have a better maintenance of DW. These include gauze, films, foams or, hydrocolloid-based dressings as well as polysaccharide-and polymer-based dressings. In recent years, scaffolds have played major role as biomaterial for wound dressing due to its tissue regeneration properties as well as fluid absorption capacity. These are three-dimensional polymeric structures formed from polymers that help in tissue rejuvenation. These offer a large surface area to volume ratio to allow cell adhesion and exudate absorbing capacity and antibacterial properties. They also offer a better retention as well as sustained release of drugs that are directly impregnated to the scaffolds or the ones that are loaded in nanocarriers that are impregnated onto scaffolds. The present review comprehensively describes the pathogenesis of DW, various dressings that are used so far for DW, the limitation of currently used wound dressings, role of scaffolds in topical delivery of drugs, materials used for scaffold fabrication, and application of various polymer-based scaffolds for treating DW.