

Hydrogels in Wound Management

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Introduction

One of the most prevalent applications of hydrogels is wound management. Thanks to their high water content and unique physical properties, hydrogels could potentially resemble biological tissues including human skin (Peppas et al. 2000; Gupta et al. 2010; Caló and Khutoryanskiy 2015; Jones et al. 2006). There is active interest in the development of new and advanced hydrogel-based products from both an academic and industrial perspective. In fact, hydrogels exhibit many characteristics of the ‘ideal’ wound dressing. These include: the capability of maintaining a moist environment at the wound site allowing gas exchange (moisture vapour transmission), biocompatibility, fast absorption of wound exudate, protection of newly formed or delicate skin and easy and relatively painless dressing removal (Thomas 1990; Gupta et al. 2010; Vowden and Vowden 2014; Boateng and Catanzano 2015). In this chapter we will provide the reader with an overview of the most recent hydrogel materials designed for wound management.

Skin Anatomy

The skin is considered to be the largest organ in the human body. It is responsible for protecting the body from external agents, thermoregulation and balance of water loss (Nicol 2005). Three different layers can be differentiated within the skin structure

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