Journal of
Bioresearch Communications

Mohajeri-Tehrani and Aalaa, J Biomol Res Ther 2013, 2:3
DOI: 10.4172/2167-7956.1000e117

Editorial Open Access

The Effect of Nanosilver Products in Prevention and Management of Diabetic Foot Ulcer

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Introduction

It is estimated that the lifetime risk of foot ulcer among diabetic patients is about 25% [1]. The prognosis of different types of foot infections in diabetic patients is unknown. On the other hand, it would be mentioned that in 25-50% diabetics, diabetic foot infection is one of the causes of lower limb amputation [2-7]. Accordingly this complication is related to the morbidity and mortality in diabetic patients [8]. Therefore novel prevention and treatment strategies could be implemented in diabetes care plan.

In this regard, Nanotechnology with good antimicrobial properties against bacteria, viruses and other eukaryotic micro-organisms could be an emerging science which has the growing use of new materials at nanoscale stages [9,10]. Currently nanosilver products are used more popularity in clothing, food containers, wound dressings, ointments, implant coatings, and many other substances [11].

There are different studies which evaluating the effect of nanosilver on the variety microorganisms grown. Morones et al. showed that antibacterial activity of silver nanoparticles against four types of gram negative bacteria, E. coli, V. cholera, P. aeruginosa and S. typhus. This study concluded that silver nanoparticles attach to the cell membrane and release silver ions [12]. Similarity Sondi and Salopek suggested the antimicrobial activity of silver nanoparticles against E. coli, a gram-negative bacterium [13]. By the way Panacek et al. emphasize on high antimicrobial and bactericidal activity of silver nanoparticles against gram-positive and gram-negative bacteria. They were methicillin resistant S. aureus [14].

According to the different studies in this field, it could be concluded that silver nanoparticles by means of the unique chemical and physical properties could be used as a useful option for the available antibacterial agents for diabetic foot infection. In view of the various functions of wound dressings, medical device coatings, silver nanoparticles impregnated textile fabrics, silver nanoparticles could be applied to prevent and treat diabetic foot ulcers.

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Received September 01, 2013; **Accepted** September 02, 2013; **Published** September 06, 2013

Citation: Mohajeri-Tehrani MR and Aalaa M (2013) The Effect of Nanosilver Products in Prevention and Management of Diabetic Foot Ulcer. J Biomol Res Ther 2: e117. doi: 10.4172/2167-7956.1000e117