

ABSTRACT

Diabetes mellitus is one of the most prevalent diseases; with an estimated 422 million cases worldwide. A general cause of blindness, heart attacks, stroke, kidney failure and amputation of the lower limbs. Diabetes mellitus is one of the major causes of impaired wound healing. Furthermore, open wounds in diabetic individuals can be life threatening as it can act as a way for bacteria to enter the body that may lead to a range of complications. An active compound present in tamanu is Callophyllolide, the main benefit it possesses is the ability to decrease production of proinflammatory cytokines and increase anti-inflammatory cytokines. Tamanu oil also exhibits a high antibacterial activity against pathogens involved in dermal infections. Recently, biocellulose has been implemented for several utilizations including wound dressing. Properties of biocellulose include high water uptake capacity and permeability that produces a favorable environment for fast tissue regeneration, pain reduction and prevent infection during the wound healing process. This research project entails the wound healing evaluation in diabetic induced mice using biocellulose dark tamanu oil hydrogel matrix. Antimicrobial test demonstrates the antimicrobial activity of tamanu while qualitative and quantitative wound measurement and additionally in the histology results shows the most prominent wound healing process was in the BC-Tamanu group. The importance of this study is a way to speed up the healing time in diabetic patients as they possess a lower healing process due to a result of a poor immune system activation.