

UNIVERSITI TEKNOLOGI MARA

**EFFECT OF ZINC CHLORIDE ON WOUND
HEALING IN RATS**

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**Dissertation submitted in partial fulfilment of the
requirements for the PH 210 Bachelor of Pharmacy (Hons.)**

FACULTY OF PHARMACY

2014

ACKNOWLEDGEMENT

I would like to express my deepest gratitude to my supervisor, Associate Professor Dr. Wong Tin Wui for his constant encouragement, exemplary guidance and constructive criticism. I also take this opportunity to thank the staffs of pharmaceuticals lab for all the information provided by them. I am grateful for their kind help in completing this dissertation. Lastly, I wish to thank my family members, laboratory partners and friends for their constant encouragement without which this dissertation would not be possible.

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ABSTRACT

This study investigated the effectiveness of zinc chloride on wound healing in rats. Partial thickness burn wound was induced on the dorsal region of rats. Three groups of rats (n=3/group) were randomly formed. The first group received no treatment at all and it acted as a control group. The second group was applied with 0.01% zinc chloride solution and the third group was applied with 5% zinc chloride solution. Wound morphology, wound size, presence of irritation, color and smell of wound were evaluated. The wound that received no treatment healed faster than the treated groups. Wound treated with 5% zinc chloride showed severe irritation of the skin. More inflammatory cells were found in wound treated with 5% zinc chloride solution than the others. The extracellular matrices in untreated wound were arranged in a higher organization level and the wound bed was characterized by a higher level of re-epithelialization. Unlike traditional belief and previous medical findings, zinc chloride does not promote the process of wound healing.

CHAPTER 1

INTRODUCTION

1.1 Background of study

The skin is considered as the largest organ in our body. It is made up of complex layers which help to wall off microorganism, chemicals and other harmful substances. However, the skin is prone to injury as it has a large surface area. Injury to the skin will cause physical impairment or worse, death (Singer & Clark, 1999). Wounds, resulting from an injury, may be induced by factors such as burns, surgery incision and laceration (Enoch & Leaper, 2005).

As a response to injury, the body will initiate clotting pathway. This cascade of reaction starts with degranulation of platelet which will release cytokines such as insulin-like growth factor 1 (IGF-1), platelet-derived growth factor (PDGF), epidermal growth factor (EGF) and transforming growth factor (TGF- β). This in turn will attract inflammatory cells such as neutrophils, macrophages, mast cells, fibroblast, endothelial cells and epithelial cells. Deposition of these cells will help to form a scab which covers the wound. After a while, the collagen present will undergo degradation in attempt to revert the appearance of the skin back to normal (Mutsaers, Bishop, McGrouther, & Laurent, 1997).